

JVC

SERVICE MANUAL

STEREO RADIO CASSETTE PLAYER

MODEL **CX-F7K**



In the model CX-F7 there are five kinds of products classified by the coloring; viz., white, red, black, blue and pink.

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1 Continuity Test at Overhaul

1. Lid ass'y

When the lid ass'y is removed, the operation safety switch is in OPEN state. For continuity test, short the left pattern of the safety switch's contact point by soldering.

Note: After the continuity test, make sure to unsolder.

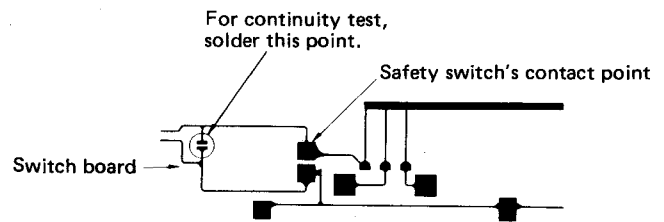


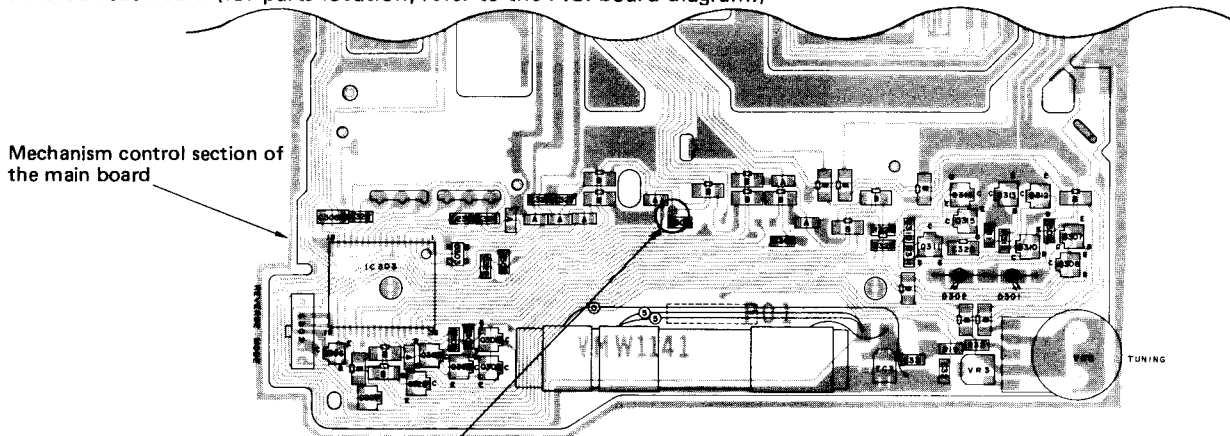
Fig. 1-1

2. Governor board

When the governor board is removed from the mechanism section, the mechanism does not operate owing to the Auto-Stop function.

For continuity test, remove five screws securing the main board and the switch board to the holder and short the pattern located in the center of the main board by soldering.

- Altered P.C. board (for parts location, refer to the P.C. board diagram.)



Solder this point to release the Auto-Stop function.
After the continuity test, make sure to unsolder it.

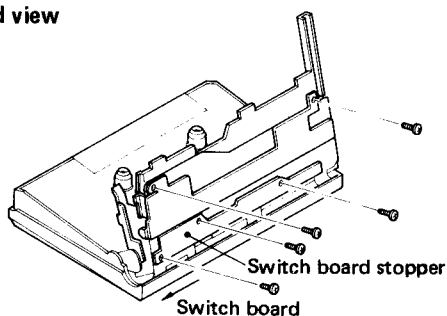
Fig. 1-2

3. Checkup procedure

When this model is taken to pieces or its main parts are removed, it does not operate normally. In this case, it is recommended to check it up as follows.

- When the main board on the lid ass'y side (mechanism control section) is removed, use the special jig used exclusively for the contact switch board.
 - 1) Fit the switch board with the contact switch board jig with the screws which secured the main board.
 - 2) Connect the wire from the jig to the main board.
 - 3) Press the operation switch terminal to operate the set.

Exploded view



Note: When re-assembling, secure the switch board at the stopper by drawing it leftwards.

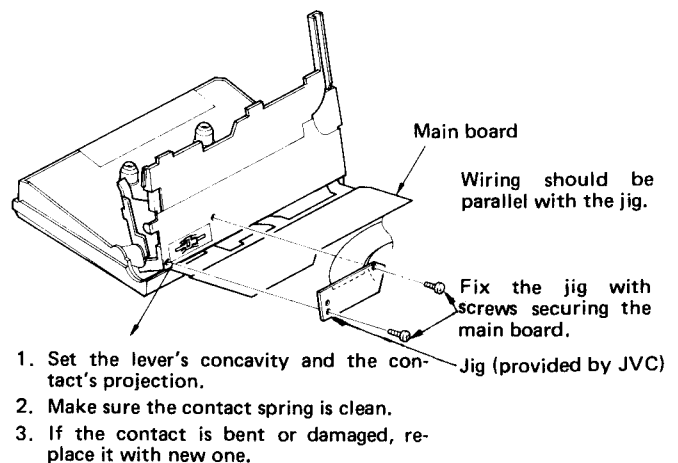


Fig. 1-3

4. Checkup of cassette section

- 1) Connect wires between the points from ⑨ through ⑩ of the contact board and the jig by soldering. (Solder them just by melting existing solder in order to avoid troubles owing to excessive amount of solder.)
 - 2) To release the Auto-Stop and Safety Operation functions, perform the previous procedures 1 and 2.
 - 3) FWD PLAY operation
 - (1) Set the position of the slide switch of the governor board to the switch arm position of the mechanism ass'y.
 - (2) After the above procedure, press the FWD PLAY switch terminal for operation. (At this time, electric potentials at contact points are as the following [Table in the article 5].)
- After completion of the above procedures, the set can be operated normally.

5. Operation modes and truth values by mode

Terminal Mode	a	b	c	d	e	f
FWD	L	L	L	—	—	H
FF	H	—	—	L	—	H
STOP	H	—	—	L	—	H
REW	H	—	—	L	—	H
REV	H	—	—	—	L	L

Note: "—" indicates open state.

"L" indicates grounding (point ⑨)

"H" indicates open state and +B voltage is supplied from the mechanism control IC.

Switch board wiring diagram

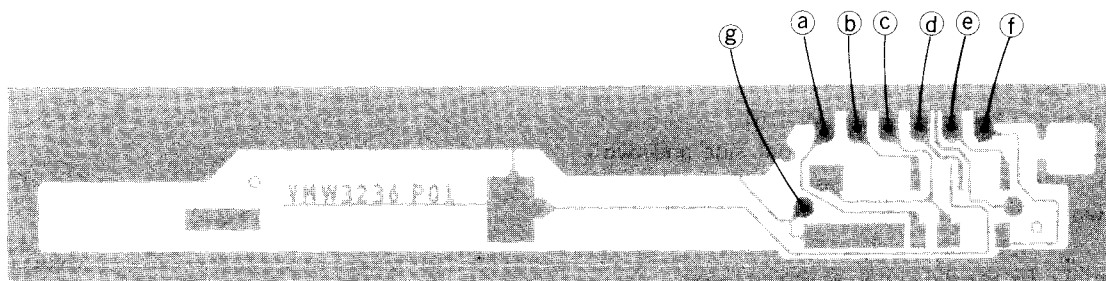


Fig. 1-4

2 Removal of Main Parts

Relationship between the main parts to be removed and other parts to be done at the same time

Parts to be removed	Upper cover	Bottom cover	Orna-ment (Inner lay)	Main board (Amp.)	Chassis (Mold)	Main board (Mecha-con)	Holder	Reel unit	SC bracket
Governor board	○		○						
Main board (Mechanism control)	○	○				○			
Main board (Amp.)	○	○	○	○	○				
Capstan motor Reel unit belt	○	○	○	○	○				
Main pulley	○	○	○	○	○			○	
Head pinch roller Actuator motor	○	○				○	○		
Mechanism sub chassis	○	○				○	○		○
Mechanism chassis ass'y	○	○	○	○	○	○	○	○	○
Flywheel	○	○	○	○	○	○	○		

○ : Parts to be removed

Precaution: On occasion of disassembly, pay special attention to screws to distinguish their uses since this model is of compact and thin structure.

Upper cover ass'y

1. Remove the slide knob (REVERSE MODE).
 2. Remove three screws ① on the front side and two screws ② on the right and left sides.
 3. Remove two screws ③ securing the upper cover from inside.
- At re-assembly, fix the slide knob as shown below.

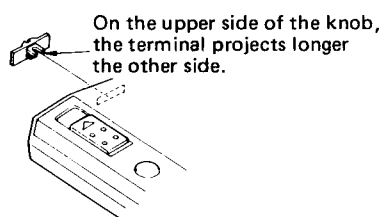


Fig. 2-2

How to arrange actuator motor wires

Arrange the actuator motor wires by twisting and bundling as shown below.

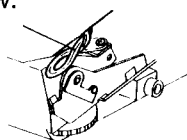


Fig. 2-3

Bottom cover

1. Lift up the EJECT knob slightly and push it outwards to remove it.
2. Remove two screws ④ securing the cover on the right and left sides.
3. Remove a screw ⑨ beside the battery.
4. Remove the bottom cover in the direction of the reverse side (side without jack).

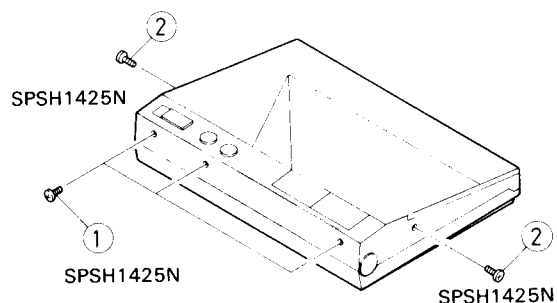


Fig. 2-1

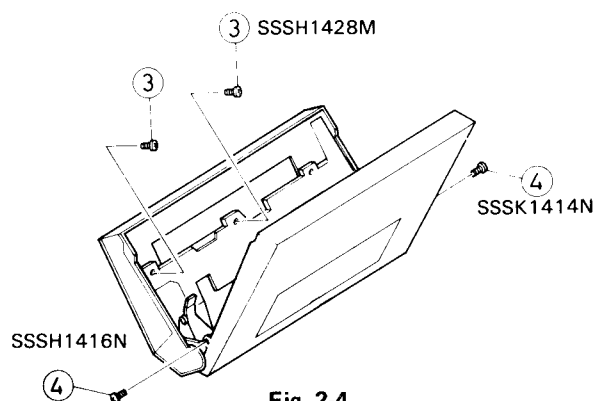


Fig. 2-4

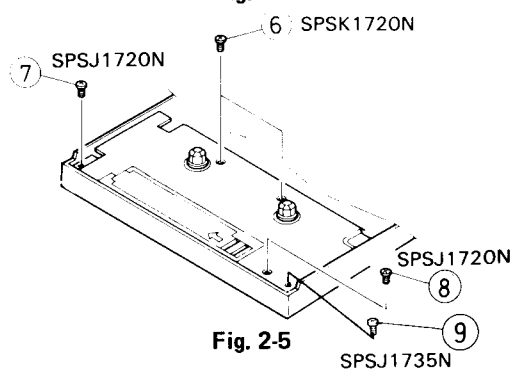


Fig. 2-5

■ Head replacement and Tape guide adjustment

1. Remove the holder spring. (Proceed in alphabetical order.)

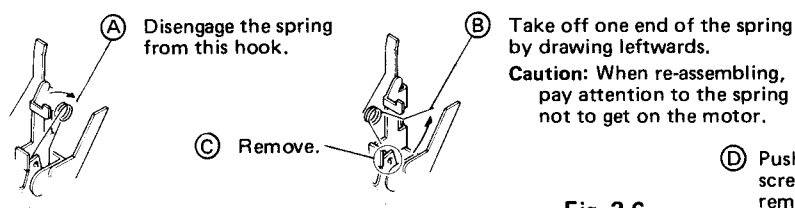
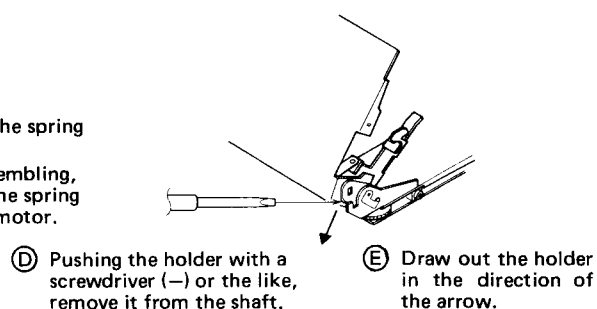


Fig. 2-6



2. Pressing the holder by the point shown in the figure, remove it from the shaft by sliding. (Refer to (D) and (E) in Fig. 2-6.)

- When re-assembling, proceed it in the contrary order.

Note: When re-assembling the upper cover ass'y, confirm that there is no deformation and damage in the contact points of the mechanism operation switches.

■ Governor board

1. Remove four screws (6), (7) and (8).
(The spring below the battery's minus side is caught by the lower pawl.)

Caution: Too much pressure to the flexible board and recklessly handling will break it. It requires very careful handling.

■ P.W. boards and Mechanism

1. Remove two screws (11) securing the main board (mechanism control section on the lid side) and three screws (12) securing the contact board.

Note: Contact point spring is disengaged when the main board is removed. When re-assembling, set its center projection into the bracket's concavity. The side with the longer slide guide should be on the righthand (see the figure below).



Fig. 2-9 Fixing of contact switch

2. Remove three screws (13) and (16) securing the main board (amp. section) on the bottom.

3. Chassis

Remove four screws (14) and (15) securing the chassis. Then, the FWD/REV cam switch lever is removed (pay attention not to forget it at re-assembly). If it is required to take the chassis to just a piece, disconnect wires to the capstan motor and governor board.

4. After the above procedure, the boards and mechanism is in the state that only the actuator motor and the head are soldered to the main board and wires to the governor are soldered, too.

- In the above condition all operation checks can be performed. (Make sure of soldering for continuity test.)
When re-assembling, fix the knobs as shown in the figure.

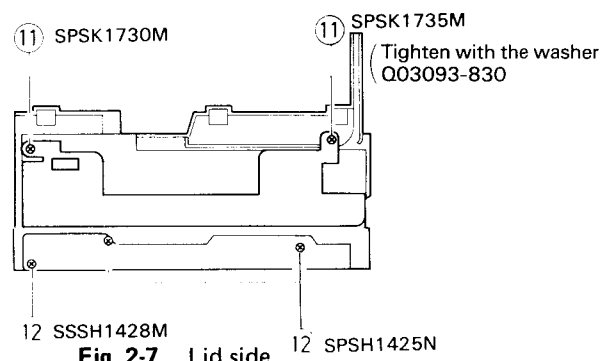


Fig. 2-7 Lid side

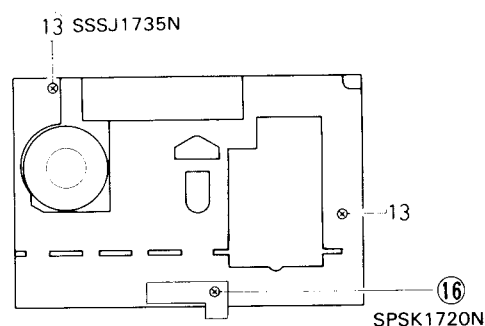


Fig. 2-8 Bottom side

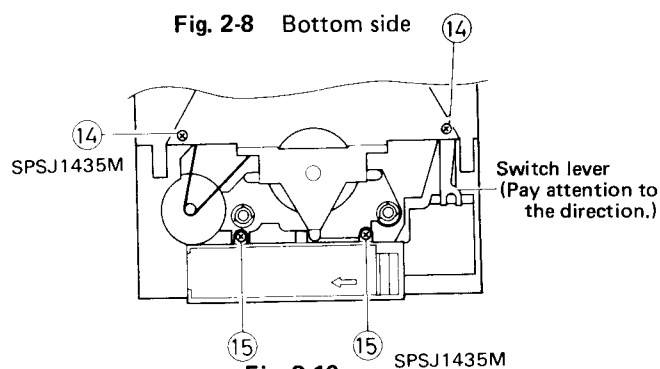


Fig. 2-10

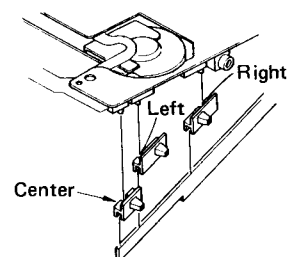


Fig. 2-11 Fixing of knobs

■ Mechanism ass'y

1. Disconnect wires connecting the main board to the head board and the actuator motor from the main board.
2. Disconnect wires connecting the governor board to the capstan motor and the main board from the governor board.

■ Reel unit ass'y

Remove three screws (20) and (21) securing the mechanism ass'y. Then, disengage the elevator's gear from the main pulley.

■ Sub chassis

Remove a screw (22) securing the sub chassis to the mechanism ass'y, and remove the SC bracket.

■ Cautions at re-assembly

1. Safety lock spring

There is a lock switch spring in the cover ass'y. Make sure to set its position at re-assembling the cover ass'y. If it is bent or damaged (including stain and dust at its contact point), all kinds of operations are inoperative. If so, replace it with new one. (Pay special attention to bent of the contact point.)

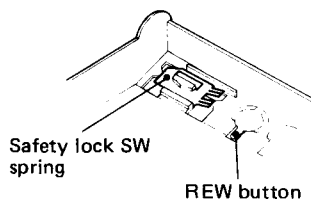


Fig. 2-14

2. Battery check

If voltage of the battery is under $1.1\text{ V} \pm 0.01\text{ V}$, the LED does not light. In such a case, it is recommended to replace or charge the battery (replacement for AA(R6), charge for BN-R1).

When charging BN-R1 battery, it is required eight hours at shortest. This battery, of course, prevents itself against overcharge, however, possibly avoid charging for long hours.

3. Head board replacement

When the head board is replaced, make sure to perform the following.

- 1) If a part of the flexible board protrudes beyond the head in height, bend the part toward the head gap.
- 2) By making the head board have two folds on the both sides to bend, it makes the head's operation smooth.

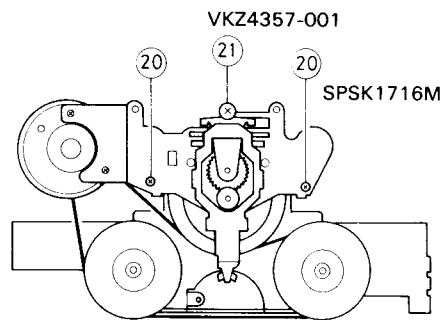


Fig. 2-12

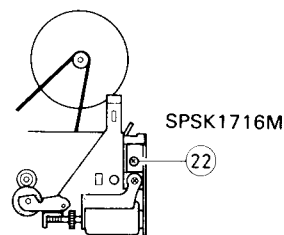


Fig. 2-13

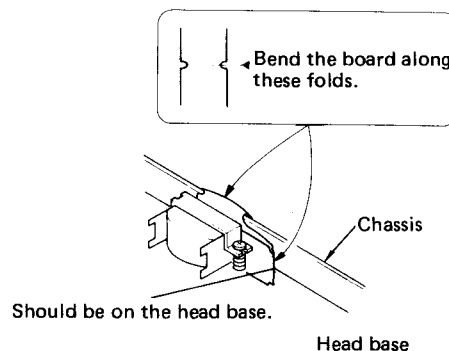


Fig. 2-15

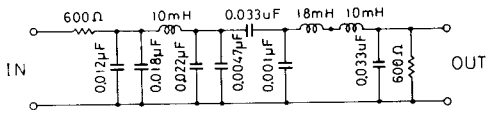
Note: This mode is basically the same as the model CX-5. Refer to the Service Manuals for CX-5 and CX-F5 at the same time.

3 Main Adjustments

CASSETTE PLAYER SECTION

Conditions Power supply : DC 1.5 V

Output : 16 Ω load impedance at both headphone terminals

	Items	Tape to be used	Adjustment procedure	Select switch position	Adjustment points
1.	Head azimuth adjustment	Test tape VTT702 (8 kHz)	Play back the test tape in the FWD and REV modes and adjust the azimuth adj. screw to the mid-point of both peak levels. (Apply screw locking compound after adjustment.)	TAPE 120 μ s (Normal)	Azimuth adjusting screw
2.	Tape speed adjustment and wow & flutter check	Test tape VTT712 (3 kHz)	Playing back the test tape for tape speed adjustment, adjust VR302 (accessible through a hole on the bottom cover) so that the counter reads 3000 Hz $\pm$ 10 Hz in FWD PLAY mode and 2940–3060 Hz in REV mode. Wow & flutter should be within 0.5% (JIS RMS).	TAPE	VR302 on Governor board
3.	Playback frequency characteristic check	Test tape VTT736	Playback output level should be as follows with respect to 1 kHz output (30 mV/16 Ω). Normal tape 125 Hz : -2 dB $\pm$ 3 dB 8 kHz : 0 $\pm$ 3 dB Metal tape 8 kHz : -4 dB $\pm$ 3 dB	TAPE 120 μ s (Normal) TAPE 70 μ s (Metal)	
4.	Playback sensitivity adjustment	Test tape VTT724 (1 kHz)	In FWD and PLAY modes, adjust output at the PB GAIN TP so that it becomes -25 dB $\pm$ 1 dB both for L and R channels. (Refer to Fig. 3-2 below.)	TAPE 120 μ s (Normal)	Shorting UP point increases 2 dB. Opening DOWN point decreases 2 dB. (for R- & L-ch respectively)
5.	Playback output check	VTT662	Output at the headphone terminals should be 4 mW (0.25 V/16 Ω) at 10% distortion. Level difference between L and R channels should be within 3 dB.	TAPE 120 μ s (Normal)	
6.	Dolby effect check	—	With a Dolby effect measuring filter (see below) used, confirm that difference between noise levels at turning on the NR switch and turning it off is more than 8 dB.		
			Dolby effect measuring filter 		

Governor board

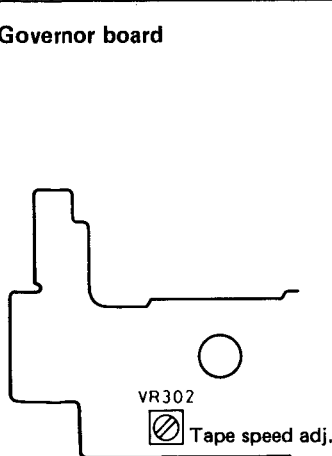
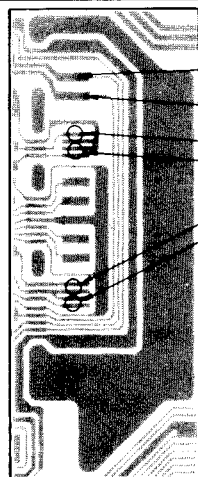


Fig. 3-1



Main board

P.B. sensitivity TP R-ch
P.B. sensitivity TP L-ch
To short 2 dB UP
To open 2 dB DOWN } R-ch
To open 2 dB DOWN
To short 2 dB UP } L-ch

Volume control
Headphones jack
Tape select SW
CrO₂/Metal
↓
Normal
Dolby SW
ON
↓
OFF

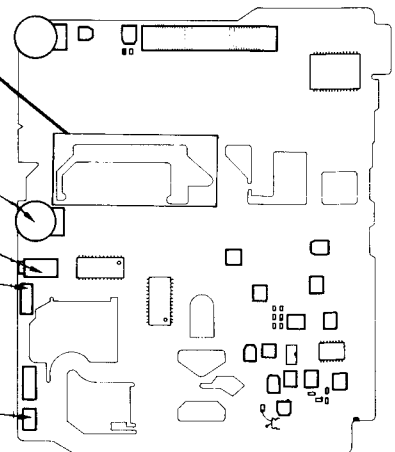


Fig. 3-2

■ Head azimuth and height adjustment .

After replacement of the head, proceed adjustments in the following order.

1. Check up the head's tilting angle (use M300 gauge).
Refer to Fig. 3-3(A).
2. Height adjustment of the head and the tape guide (use M300 gauge). Refer to Fig. 3-3(B).
After checking up the tape guide height at its right and left ends, adjust the heights of the both ends by turning the screws (A) and (B) .
3. Head azimuth adjustment (use the alignment tape VTT-702 [8 kHz segment]).
 - 1) In FWD mode, adjust the azimuth screw (A) to obtain the maximum output.
 - 2) With the tape travelling in REV PB mode, adjust the head height adjusting screw (B) to obtain the peak level. (At this time, make sure not to turn the screw over 180°.) Difference between the peak levels in FWD and REV modes should be within 4 dB.
 - 3) With the tape travelling in FWD mode again, adjust the azimuth adjusting screw (A) to set for the peak level.
 - 4) Repeat tape travelling in REV mode, check the peak level again.
 - 5) After completion of the above procedures, lock the screws (A) and (B) with screw locking bond, etc.
4. In the step 3.-2) above, if the difference exceeds 4 dB, perform the following adjustment.
 - 1) In REV mode, turn the head height adjustment screw (B) by 180° in the contrary direction to the peak.
 - 2) Repeat the adjustment of 3.-3) above.

● Final fine adjustment

Fine adjustment can be performed by turning the screw through a hole located on the right top of the FF button on the cover.

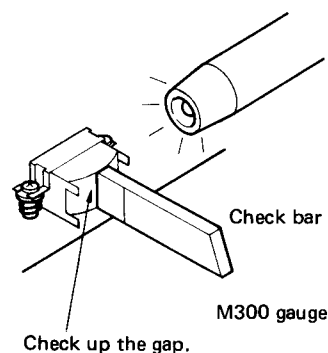


Fig. 3-3(A) Checkup of head tilting angle

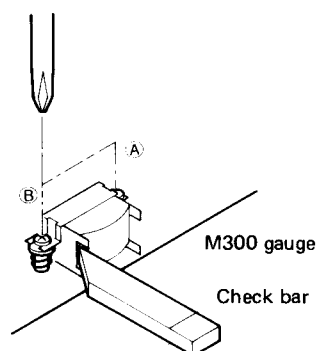


Fig. 3-3(B) Checkup of tape guide height

Adjustment Points of Tuner Section

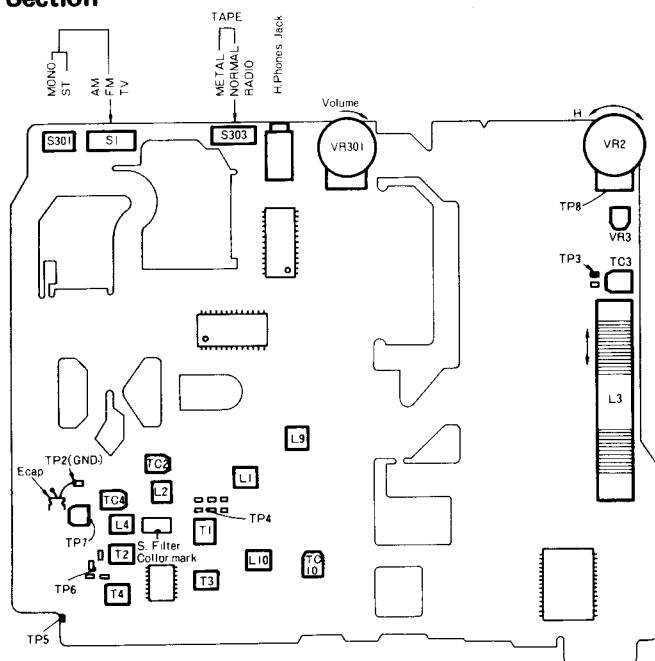


Fig. 3-4

■ Adjustment of tuner section

Conditions Power supply : DC 1.5 V

Volume control : Set to the maximum position except for IF adjustment (at the minimum position).

Output measurement point : Headphones (output level of 56.6 mV/16 Ω)

Band select switch : Set to RADIO.

■ Tuning voltage adjustment

Connect a voltmeter to the governor board. With the tuning volume VR2 turned fully clockwise (Lowest position), adjust VR3 so that voltage between TP8 and TP2 (GND, minus side of an electrolytic capacitor) becomes $1.5 \text{ V} \pm 0.1 \text{ V}$.

■ AM IF adjustment

Band select switch : Set to AM position.

Position of VR2 : Near the maximum (High) voltage position with no input signal.

Input : From TP3 terminal

Output : From TP5

Ground : TP2

Input signal	Adjustment points	Output measurement points	Adjustment procedure
From OUT terminal of IF sweep generator (450 kHz). (Connect 30 pF capacitance & 33 k Ω resistance in series.)	T3, T4	Connect TP5 (hot side) and TP2 (GND side) to the generator's IN terminal. (Connect 0.08 μ F capacitance and 100 k Ω resistance in series.)	With maximum output, adjust T3 and T4 to obtain symmetrical waveforms for L and R channels.

■ AM RF adjustment

Input : Via standard loop antenna; SSG modulation output : 400 Hz, 30%.

No.	Input frequency	Adjustment points	Position of VR2	Adjustment procedure
1	520 kHz	L4	Minimum voltage (Low)	Tune in a required frequency.
2	1625 kHz	TC4	Maximum voltage (High)	
3	Perform adjustments by repeating the above items (No. 1 and 2).			
4	600 kHz	L3	Adjust for 600 kHz signal reception.	Set for maximum output.
5	1400 kHz	TC3	Adjust for 1400 kHz signal reception.	
6	Perform adjustments by repeating the above items (No. 4 and 5).			

■ FM IF adjustment

Band select switch : FM position

Position of VR2 : Near the maximum (High) voltage position with no input signal.

Input : TP4

Output : TP5

Ground : TP2

Input signal	Adjustment points	Output measurement points	Adjustment procedure
From OUT terminal of IF sweep generator (10.7 MHz).	IF: T1 DISC: T2 T1 $\rightarrow$ T2	Connect IF OUT terminal to the generator's IN terminal.	Set the band select switch to FM. Adjust T1 to obtain symmetrically maximum IF outputs for R and L channels. (Refer to Note below.) Turn T2 to make symmetrical S-curved waveforms for R and L channels at maximum.

Note: Ceramic filter's center frequencies: Black 10.64 MHz, Blue 10.67 MHz, Red 10.7 MHz, Orange 10.73 MHz, White 10.76 MHz

■ FM RF and MPX adjustments

Input : Via rod antenna (TP1) with GND (TP5)

Band select switch : FM position

FM SSG output : 400 Hz, 30% (22.5 kHz deviation)

FM mode : STEREO

Output impedance : 75 Ω unbalanced

No.	Input frequency	Adjustment points	Position of VR2	Adjustment procedure
1	87.4 MHz	L2	Minimum voltage (Low)	Tune in a required frequency. (except G version)
2	108.75 MHz	TC2	Maximum voltage (High)	
1	87.7±0.05MHz	L10	Minimum voltage	Tune in a required frequency. (G version)
2	105±0.1MHz	TC10	Maximum voltage	
3	Perform adjustments by repeating the above items (No. 1 and 2).			
4	90 MHz	L1	For 90 MHz signal reception.	Set for the maximum output.
FM, MPX	98 MHz, 60 dB (Monaural)	VR1		Adjust VR1 to tune in 76 kHz±200 Hz. Connect a frequency counter to TP6 and TP2 (GND).

4 Technical Information

1. Principle of operation

The mechanism control system of this model functions to determine one of five operation modes (1. PB [Playback in the normal direction], 2. FF [Fast Forward], 3. STOP, 4. F. REV [Fast Reverse], 5. REV PB [Playback in the reverse direction]) according to settings of the cam's position and the flip-flops inside the IC.

There are three cam positions, viz., **F** (Normal PB), **S** (STOP and FF) and **R** (REV PB). Every position determines and sets the gear ratio, necessity of clutch and pinch roller operations. On the other hand, the switch (S304) synchronizing with the cam determines rotating direction of the capstan motor.

There are two flip-flops which also determine the rotating direction of the capstan motor; one is for $\triangleright\triangleright$ (normal direction) and the other for $\triangleleft\triangleleft$ (reverse direction).

Table 1 below shows relationship between cam positions and flip-flop settings by operation mode.

By key operation, the mechanism control IC (M51556P) totally controls the operation mode such as to rotate the actuator motor in the normal/reverse direction and to stop it, and to set/reset the flip-flops inside the IC.

Table 1 Relationship between cam positions and flip-flop operation by operation mode

Cam position	Condition of the mechanism	Flip-flop operation	Capstan motor rotation	Operation mode (Symbol)
F	- Low gear - Clutch operation - Pinch roller contact		FWD	PB ($\triangleright$ mode)
S	- High gear - No clutch operation - Pinch roller released from contact	$\triangleright\triangleright$ flip-flop is set.	STOP	FF ($\triangleright\triangleright$ mode)
		Both flip-flops are reset.		STOP ($\square$ mode)
		$\triangleleft\triangleleft$ flip-flop is set.	REV	F. REV ($\triangleleft\triangleleft$ mode)
R	- Low gear - Clutch operation - Pinch roller contact			REV PB ($\triangleleft$ mode)

2. Operation of the mechanism control IC (M51556P)

1) Input/Output ports and their functions

Table 2 Output ports

Pin No.	Symbol	Function	Port type	Active value
23	$\overline{\text{C. MOTOR FWD}}$	Rotates the capstan motor in the normal direction.	Open collector	L
24	$\overline{\text{C. MOTOR REV}}$	Rotates the capstan motor in the reverse direction.	"	L
26	FWD LED	Turns on the FWD LED (indicating normal rotation).	"	H
27	REV LED	Turns on the REV LED (indicating reverse rotation).	"	H
28	MUTE	For muting output in the FF mode	"	H
29	$\overline{+B \text{ SW}}$	Stops FF operation in the PB mode.	"	L
30	$\overline{\text{CD}}$	Turns on the converter's source power.	"	L
31	$\overline{\text{OP}}$	For muting when the actuator motor is in operation.	"	L
32	$\overline{\text{REV}}$	For switchover of the amplifier's output in REV PB mode	"	L
33	$\overline{\text{A. MOTOR FWD}}$	Rotates the actuator motor in the normal direction.	"	L
34	$\overline{\text{A. MOTOR REV}}$	Rotates the actuator motor in the reverse direction.	"	L

Table 3 Input ports

Pin No.	Symbol	Function	Port type	Active value
4		Command of FF operation (in the normal direction)	See Fig. a.	L
5		STOP command	"	L
6		Command of F. REV operation	"	L
8		Command of PB and REV PB operations	"	L
9		Rotates the capstan motor in the normal direction. Turns on the FWD LED. Detects normal rotation.	"	L
11		Detects the mechanism's operating condition.	See Fig. b.	L
13				
14				
12		Detects the mechanism's FWD/REV operating condition.	See Fig. c.	L
15		Rotates the capstan motor in the reverse direction. Turns on the REV LED.	See Fig. a.	L
16	AUTO STOP TC.	Set AUTO-STOP time.		H
17	AUTO STOP	3-value input port to detect tape travelling Loads pin 16 with Low potential according to L or H input.	See Fig. d.	L/H
19	MODE	Sets for AUTO REV mode. 3-value input port	"	L : mode M : mode H : mode
21	Con.	Power supply terminal for the AUTO-STOP circuit.		
35	BATT. CHECK	Turns on the FWD LED and REV LED ports.		H (Turns on with approx. 1.0 V input)

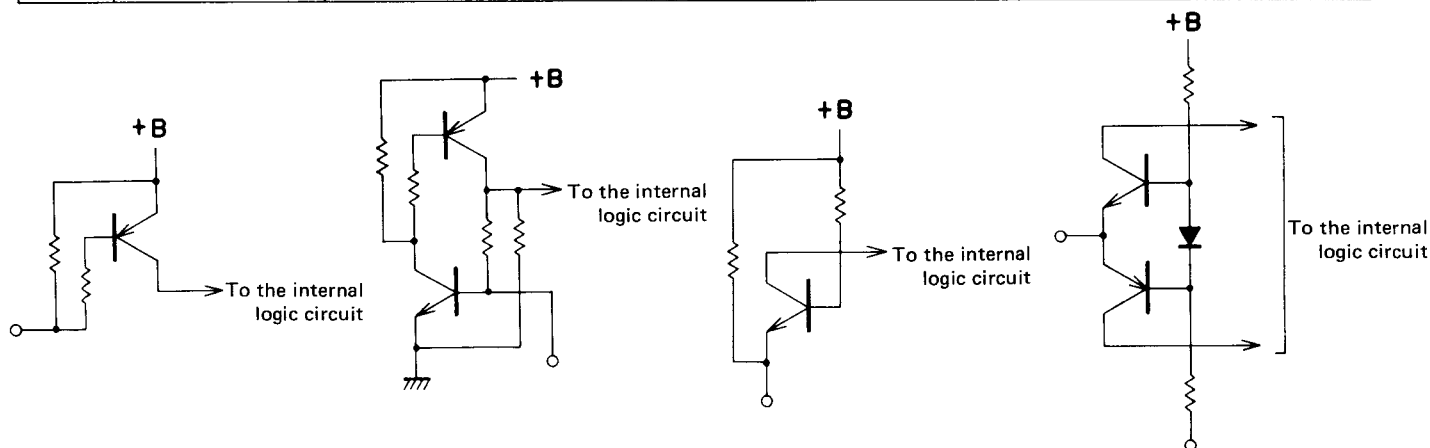


Fig. a Key input ports

Fig. b Flip-flop's reset input ports

Fig. c FWD/REV position detecting ports

Fig. d 3-value input ports

2) Input keys

- (1) (PB and REV operations)
- (2) (FF operation)
- (3) (F. REV operation)
- (4) (STOP)

Every key is connected to a corresponding input port (DIREC, , ,) of the IC, respectively.

3) Operation patterns of cam interlocking switch (S305)

The switch (S305) synchronizing with the cam has five operation patterns (, , , ,) that are connected with a corresponding port of the IC (see Fig. 1). When a contact point is engaged for operation, the corresponding active value becomes Low level (see Table 3).

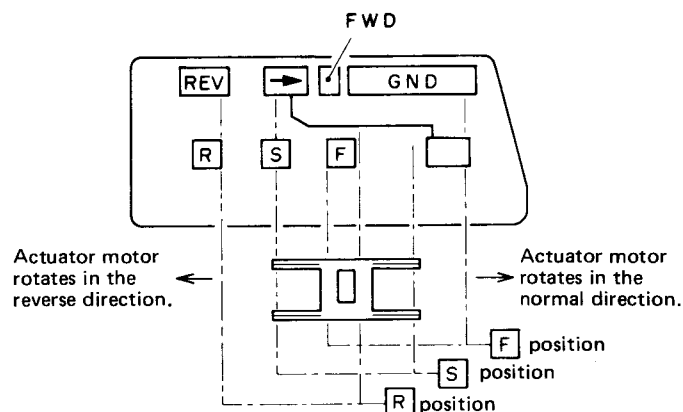
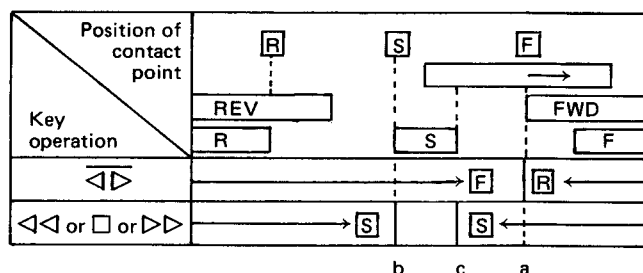


Fig. 1 Pattern of the cam interlocking switch (S305)

Table 4 Actuator motor operation diagram

Note: → indicates normal rotation of actuator motor.

← indicates reverse rotation of actuator motor.

F, R, S indicate cam contact positions.

4) Relating states of I/O ports and capstan motor switch (S305) (See Table 5 below.)

Table 5 State of I/O ports by mode

Mode	Mechanism control IC										S304 Capstan motor switch
	Input port*1)		Output port*2)								
	FWD	REV	C.MOTOR FWD	C.MOTOR REV	REV	CD	+B	MUTE	FWD LED	REV LED	
>	L	H	L	H	H	L	L	L	H	L	FWD position
>>	H	H	L	H	H	L	H	H	H	L	STOP/FF/REW position
□	H	H	H	H	H	H	H	L	L	L	
<<	H	H	H	L	L	L	H	H	L	H	
<	H	L	H	L	L	L	L	L	L	H	REV position

Notes: *1) States of these input ports are determined according to position of the cam's contact point.

*2) The above truth values of FWD LED and REV LED are all "L" when potential at BATT. CHECK input port is "H" and BATT. CHECK level is "L".

5) Other I/O ports

- (1) **AUTO STOP** (pin 17) and **AUTO STOP TC** (pin 16)
When differential waveform from the photo coupler is supplied to pin 17 (AUTO STOP), pin 16 (AUTO STOP TC) discharges.

When tape travel reaches its end, pin 16 becomes of "M" level and pin 17 becomes "H" at a set time for AUTO STOP operation. At this time, it starts one of three operations (≡ ⇒ ∞) according to the present mode of the port. (See Table 3.)

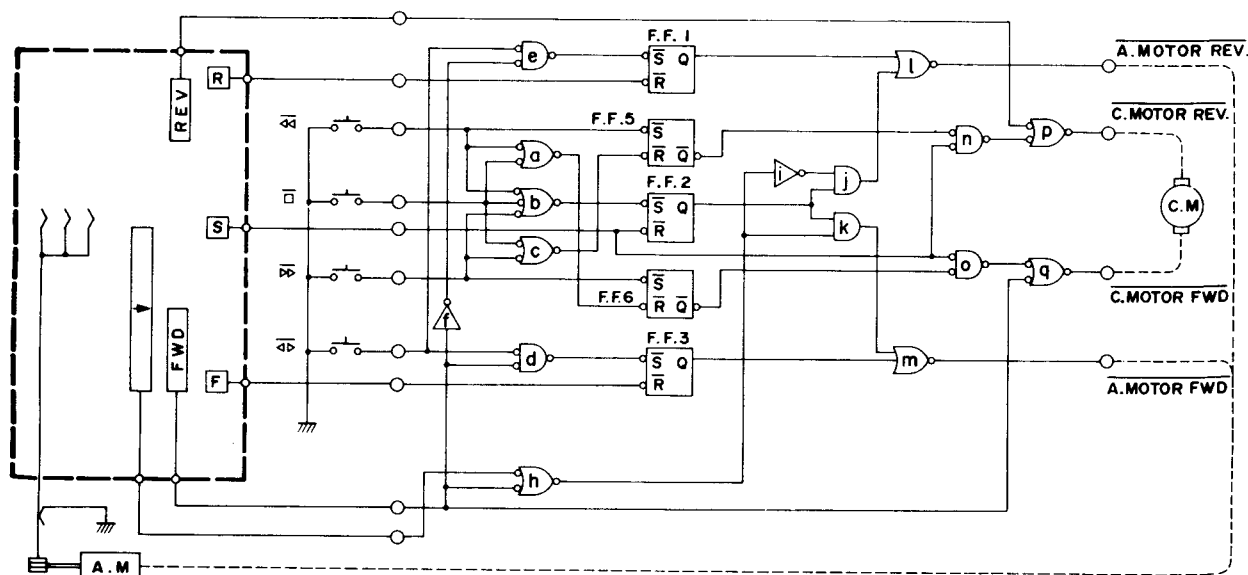
- (2) **BATTERY CHECK** (pin 35)

With 1 V (or more) input, it makes the FWD LED and REV LED possible to turn on.

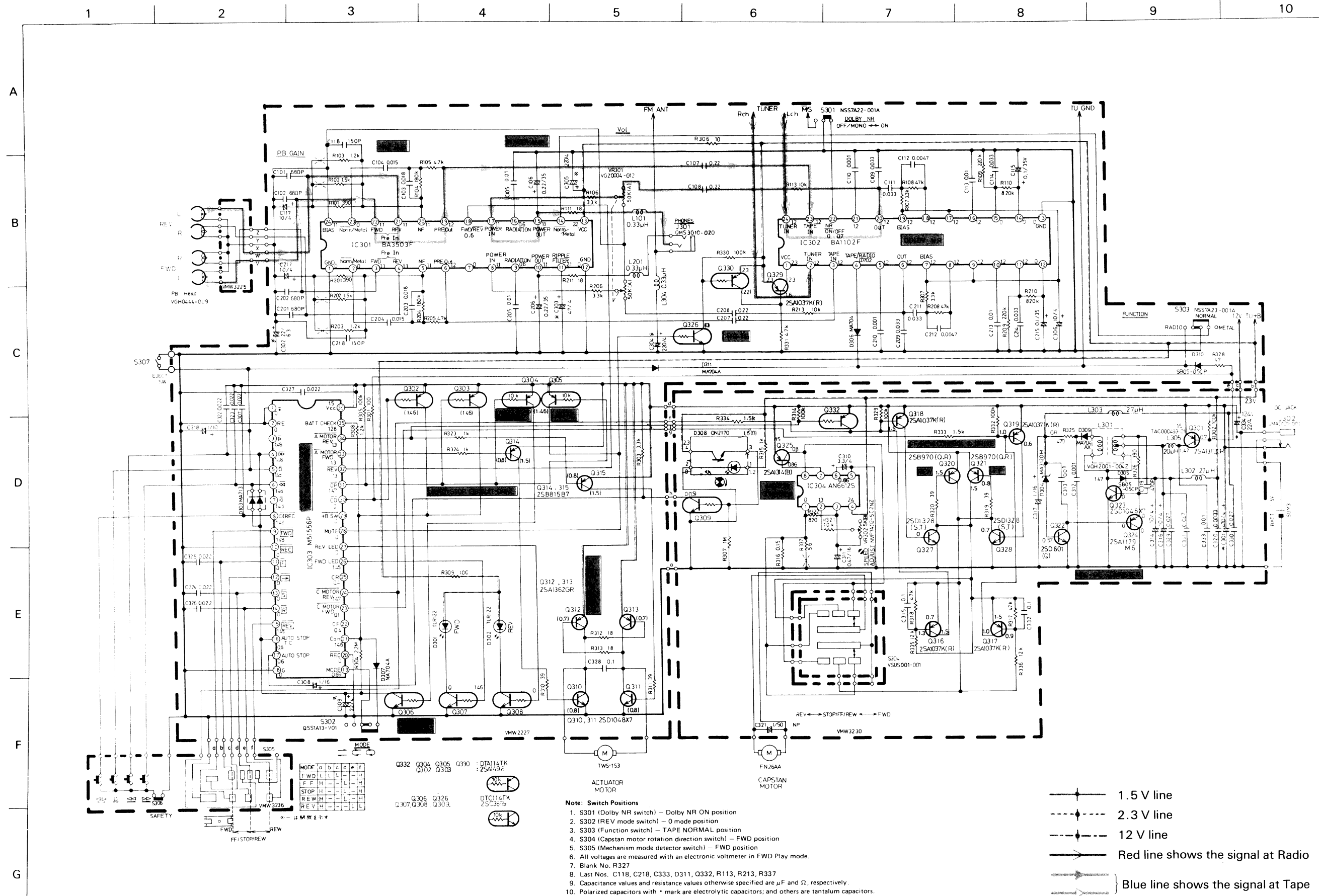
- (3) **OP** (pin 31)

During the actuator motor is in operation, OP is of "L" level to mute amplifier's output.

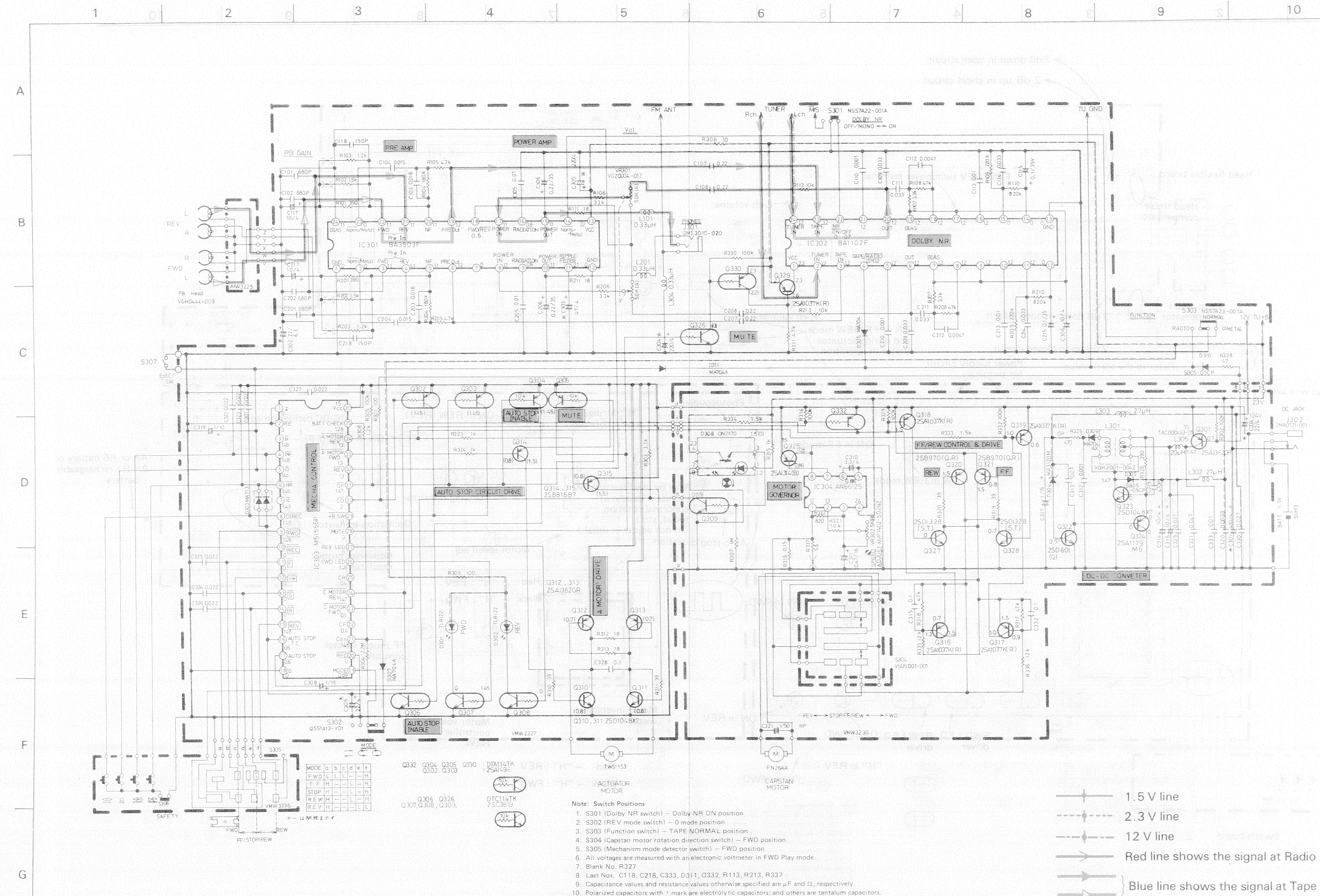
6) Logical diagram



Standard Schematic Diagram (Amplifire section)



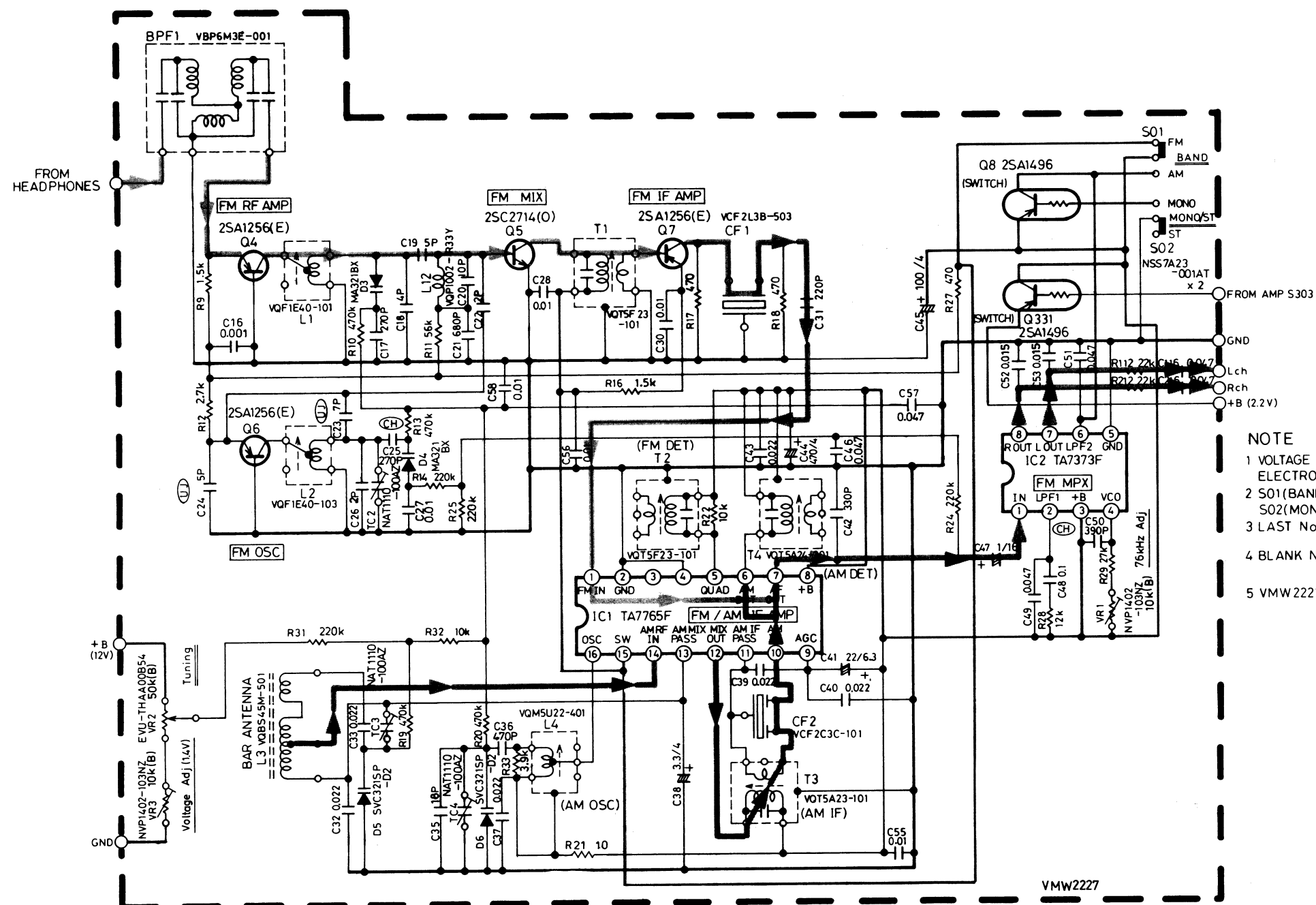
Standard Schematic Diagram (Amplifire section)



Standard Schematic Diagram (Tuner section)

1 2 3 4 5 6 7 8 9 10

A
B
C
D
E
F
G



NOTE
1 VOLTAGE VALUES ARE MEASURED WITH NO SIGNAL USING ELECTRONIC VOLT METER
2 S01(BAND SELECT SWITCH) IS FM POSITION
S02(MONAUURAL STEREO SWITCH) IS STEREO POSITION
3 LAST No C58, R33
4 BLANK No R1~8,15, 23, 26, 30
C1~15, 29, 34, 54
5 VMW2227-005 ~

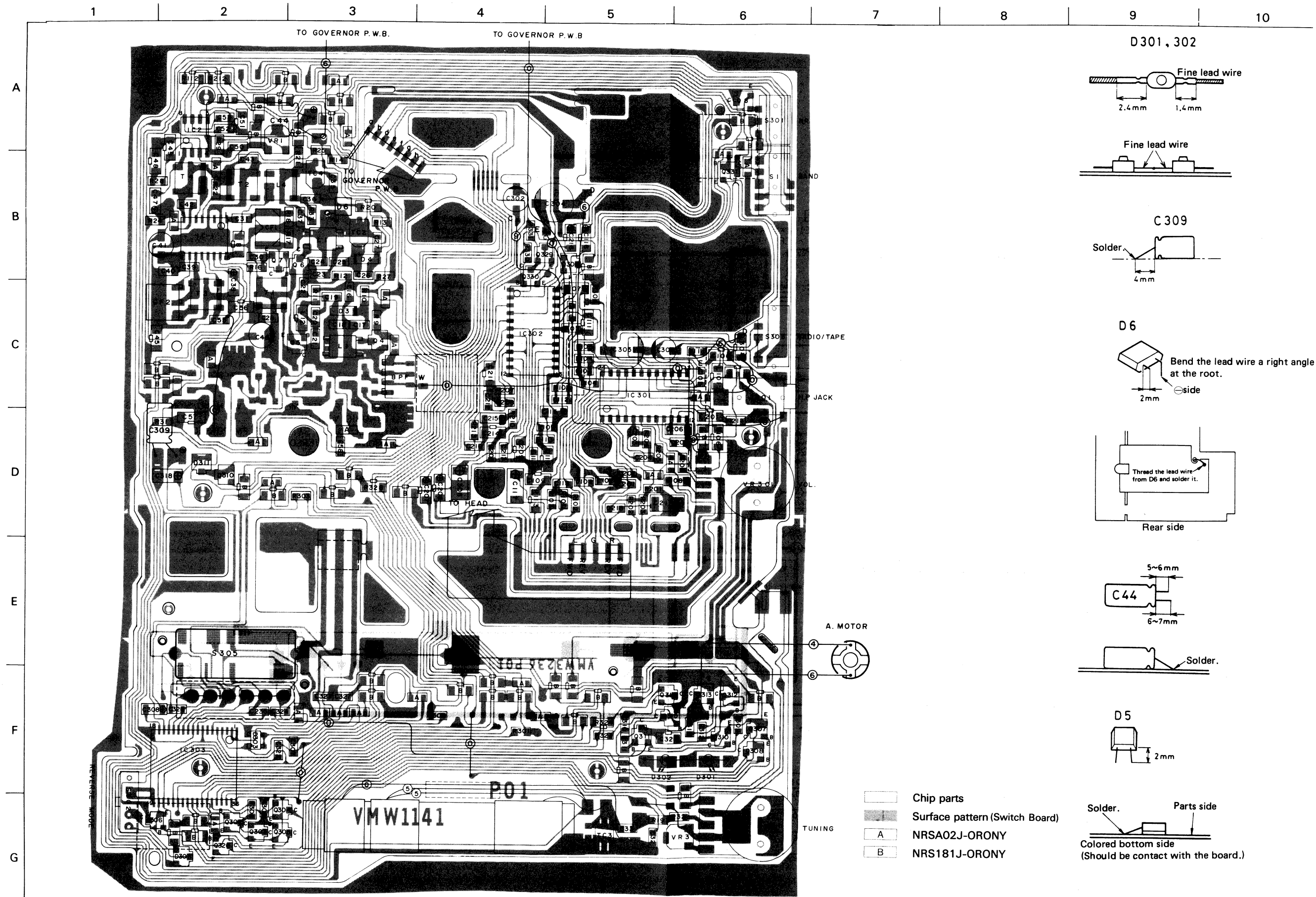
No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC 1	0.7 (0)	0	0.5 (0)	0	2.2 (2.2)	2.2 (2.3)	0.6 (0.5)	2.2 (2.3)	1.6 (1.6)	2.2 (2.1)	2.2 (2.1)	0.2 (0.7)	0.2 (0.7)	2.2 (0)	2.2 (2.3)	
IC 2	0.2 (0.2)	1.7 (1.7)	2.2 (2.3)	2.2 (2.3)	0	2.2 (2.3)	0.9 (0.9)	0.9 (0.9)								

No	Q4	Q5	Q6	Q7	Q8	Q331
E	0.7	0	0.6	0.7	2.2 (2.2)	2.28 (2.31)
C	0	2.2	0	0.5	2.21 (1.52)	2.22 (2.27)
B	0	0.7	0	0	0 Open	0 (0)

VOLTAGES POSITION : FM, (AM), [FM STEREO SIGNAL 60dBμV]
UNIT : VOLT

Blue line shows the signal at FM.
Red line shows the signal at AM.
+B circuits.

6 P. C. Board Parts and Parts List



Main Board Parts List

REF. NO	PARTS NO.	PARTS NAME
BPF	VBP6M3E-001T	BP FILTER
CF1	VCF2L3B-503T	C FILTER
CF2	VCF2C3C-101T	C FILTER
C016	NCB21EK-102AY	C CAPACITOR
C017	NCS21HJ-271AY	C CAPACITOR
C018	NCS21HC-4R0AY	C CAPACITOR
C019	NCS21HC-5R0AY	C CAPACITOR
C020	NCS21HJ-150AY	C CAPACITOR
C021	NCS21HJ-681AY	C CAPACITOR
C022	NCS21HC-2R0AY	C CAPACITOR
C023	NCT21UJ-7R0AY	C CAPACITOR
C024	NCT21RH-100AY	C CAPACITOR
C025	NCT21CH-271AY	C CAPACITOR
C026	NCS21HC-2R0AY	C CAPACITOR
C027	NCB21EK-103AY	C CAPACITOR
C028	NCB21EK-103AY	C CAPACITOR
C030	NCB21EK-103AY	C CAPACITOR
C031	NCS21HJ-221AY	C CAPACITOR
C032	NCB21EK-223AY	C CAPACITOR
C033	NCB21EK-223AY	C CAPACITOR
C035	NCS21HJ-200AY	C CAPACITOR
C036	NCS21HJ-471AY	C CAPACITOR
C037	NCB21EK-223AY	C CAPACITOR
C038	NEF10GM-335RY	TS E CAPACITOR
C039	NCB21EK-223AY	C CAPACITOR
C040	NCB21EK-223AY	C CAPACITOR
C041	NEA10JM-226RZ	AL E CAPACITOR
C042	NCS21HJ-331AY	C CAPACITOR
C043	NCB21EK-223AY	C CAPACITOR
C044	QET40GR-477S	E CAPACITOR
C045	QCY81EK-473Y	C CAPACITOR
C046	NEA10DM-107RZ	E CAPACITOR
C047	NEF11CM-105RY	TS E CAPACITOR
C048	QCF81HZ-104Y	C CAPACITOR
C049	QCY81EK-473Y	C CAPACITOR
C050	NCT21CH-391AY	C CAPACITOR
C051	QCY81EK-473Y	C CAPACITOR
C052	NCB21EK-153AY	C CAPACITOR
C053	NCB21EK-153AY	C CAPACITOR
C055	NCB21EK-103AY	C CAPACITOR
C056	QCY81HK-103Y	C CAPACITOR
C057	QCY81EK-473Y	C CAPACITOR
C058	NCB21EK-103AY	C CAPACITOR
C101	NCS21HJ-681AY	C CAPACITOR
C102	NCS21HJ-681AY	C CAPACITOR
C103	NCB21EK-183AY	C CAPACITOR
C104	NCB21HK-153AY	C CAPACITOR
C105	NCB21HK-103AY	C CAPACITOR
C106	NEF10GM-335RY	TS E CAPACITOR
C107	QCF81EZ-224Y	C CAPACITOR
C108	QCF81EZ-224Y	C CAPACITOR
C109	QCY81EK-333Y	C CAPACITOR
C110	NCB21HK-102AY	C CAPACITOR
C111	QCY81EK-333Y	C CAPACITOR
C112	NCB21HK-472AY	C CAPACITOR
C113	NCB21HK-103AY	C CAPACITOR
C114	QCY81EK-333Y	C CAPACITOR
C115	NEF11VM-104RY	TS E CAPACITOR
C116	QCY81EK-473Y	C CAPACITOR
C117	QEF80GM-106X	TS E CAPACITOR
C201	NCS21HJ-151AY	C CAPACITOR
C202	NCS21HJ-681AY	C CAPACITOR
C203	NCB21EK-183AY	C CAPACITOR
C204	NCB21HK-153AY	C CAPACITOR

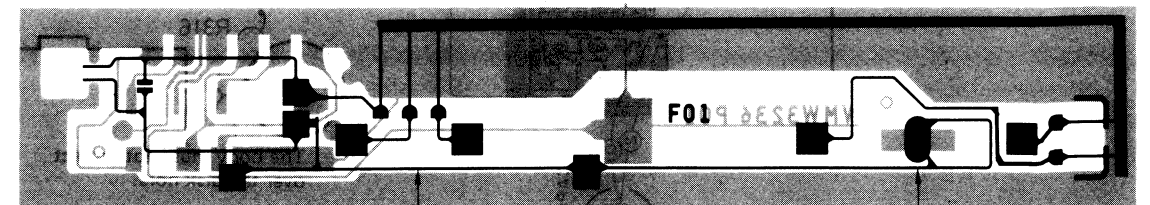
REF. NO	PARTS NO.	PARTS NAME
C205	NCB21HK-103AY	C CAPACITOR
C206	NEF10GM-335RY	TS E CAPACITOR
C207	QCF81EZ-224Y	C CAPACITOR
C208	QCF81EZ-224Y	C CAPACITOR
C209	QCY81EK-333Y	C CAPACITOR
C210	NCB21HK-102AY	C CAPACITOR
C211	QCY81EK-333Y	C CAPACITOR
C212	NCB21HK-472AY	C CAPACITOR
C213	NCB21HK-103AY	C CAPACITOR
C214	QCY81EK-333Y	C CAPACITOR
C215	NEF11VM-104RY	TS E CAPACITOR
C216	QCY81EK-473Y	C CAPACITOR
C217	QEF80GM-106X	TS E CAPACITOR
C218	NCS21HJ-151AY	C CAPACITOR
C302	NEA10JM-226RZ	AL E CAPACITOR
C303	NEA10GM-476RZ	AL E CAPACITOR
C304	NEA10GM-227RZ	AL E CAPACITOR
C305	NEA10GM-227RZ	AL E CAPACITOR
C306	QEF80GM-106X	TS E CAPACITOR
C307	NCB21EK-223AY	C CAPACITOR
C308	NEF11CM-105RY	TS E CAPACITOR
C309	QER40GM-226M	E CAPACITOR
C318	NEF11CM-105RY	TS E CAPACITOR
C322	NCB21EK-223AY	C CAPACITOR
C323	NCB21EK-223AY	C CAPACITOR
C324	NCB21EK-223AY	C CAPACITOR
C325	NCB21EK-223AY	C CAPACITOR
C326	NCB21EK-223AY	C CAPACITOR
C327	NCB21EK-223AY	C CAPACITOR
C328	QCF81HZ-104Y	C CAPACITOR
D003	MA321WL-TX	V.DIODE
D004	MA321WL-TX	V.DIODE
D005	SVC321SP-D2	V.DIODE
D006	SVC321SP-D2	V.DIODE
D301	TLR122	L E D
D302	TLR122	L E D
D303	MA713X	DIODE
D306	MA704AX	S K DIODE
D307	MA704AX	S K DIODE
D310	SB05-05CP-TB	S K DIODE
D311	MA704AX	S K DIODE
IC01	TA7765AF-T1	IC
IC02	TA7373F-T1	IC
IC301	BA3503F-T1	I C
IC302	BA1102F-T1	I C
IC303	M51556P-T1	IC
J301	QMS3G10-020	JACK
L001	VQF1E40-101-T	RF COIL
L002	VQF1E40-103-T	OSC COIL
L003	VQBS45M-501	BAR ANTENA
L004	VQM5U22-401T	OSC COIL(MW)
L012	VQP1002-R33Y	INDUCTOR
L101	VQP1002-R33Y	INDUCTOR
L201	VQP1002-R33Y	INDUCTOR
L304	VQP1002-R33Y	INDUCTOR
Q004	2SA1256(E4E5)TB	TRANSISTOR
Q005	2SC2714(O)TE85R	TRANSISTOR
Q006	2SA1256(E4E5)TB	TRANSISTOR
Q007	2SA1256(E4E5)TB	TRANSISTOR
Q008	2SA1496-TB	TRANSISTOR
Q302	2SA1496-TB	TRANSISTOR
Q303	2SA1496-TB	TRANSISTOR
Q304	DTA114TKT96	TRANSISTOR
Q305	DTA114TKT96	TRANSISTOR
Q306	DTC114TKT96	TRANSISTOR

REF. NO	PARTS NO.	PARTS NAME
Q307	2SC3859-TB	TRANSISTOR
Q308	2SC3859-TB	TRANSISTOR
Q310	2SD1048X7-T-TB	TRANSISTOR
Q311	2SD1048X7-T-TB	TRANSISTOR
Q312	2SA1362GR-TE85L	TRANSISTOR
Q313	2SA1362GR-TE85L	TRANSISTOR
Q314	2SB815B7-T-TB	TRANSISTOR
Q315	2SB815B7-T-TB	TRANSISTOR
Q326	DTC114TKT96	TRANSISTOR
Q329	2SA1037K(R)T96	TRANSISTOR
Q330	DTA114TKT96	TRANSISTOR
Q331	2SA1496-TB	TRANSISTOR
R009	NRSA02J-152NY	MG RESISTOR
R010	NRSA02J-474NY	MG RESISTOR
R011	NRSA02J-563NY	MG RESISTOR
R012	NRSA02J-272NY	MG RESISTOR
R013	NRSA02J-474NY	MG RESISTOR
R014	NRSA02J-224NY	MG RESISTOR
R016	NRSA02J-152NY	MG RESISTOR
R017	NRSA02J-471NY	MG RESISTOR
R018	NRSA02J-471NY	MG RESISTOR
R019	NRSA02J-474NY	MG RESISTOR
R020	NRS181J-474NY	MG RESISTOR
R021	NRSA02J-100NY	MG RESISTOR
R022	NRSA02J-103NY	MG RESISTOR
R024	NRSA02J-224NY	MG RESISTOR
R025	NRSA02J-224NY	MG RESISTOR
R027	NRSA02J-471NY	MG RESISTOR
R028	NRSA02J-123NY	MG RESISTOR
R029	NRSA02J-273NY	MG RESISTOR
R031	NRSA02J-224NY	MG RESISTOR
R032	NRSA02J-103NY	MG RESISTOR
R033	NRSA02J-392NY	MG RESISTOR
R034	NRSA02J-333NY	MG RESISTOR
R101	NRSA02J-391NY	MG RESISTOR
R102	NRSA02J-152NY	MG RESISTOR
R103	NRSA02J-122NY	MG RESISTOR
R104	NRSA02J-184NY	MG RESISTOR
R105	NRSA02J-472NY	MG RESISTOR
R106	NRS181J-333NY	MG RESISTOR
R107	NRSA02J-332NY	MG RESISTOR
R108	NRSA02J-473NY	MG RESISTOR
R109	NRSA02J-224NY	MG RESISTOR
R110	NRSA02J-824NY	MG RESISTOR
R111	NRSA02J-180NY	MG RESISTOR

△ Parts are safety assurance parts

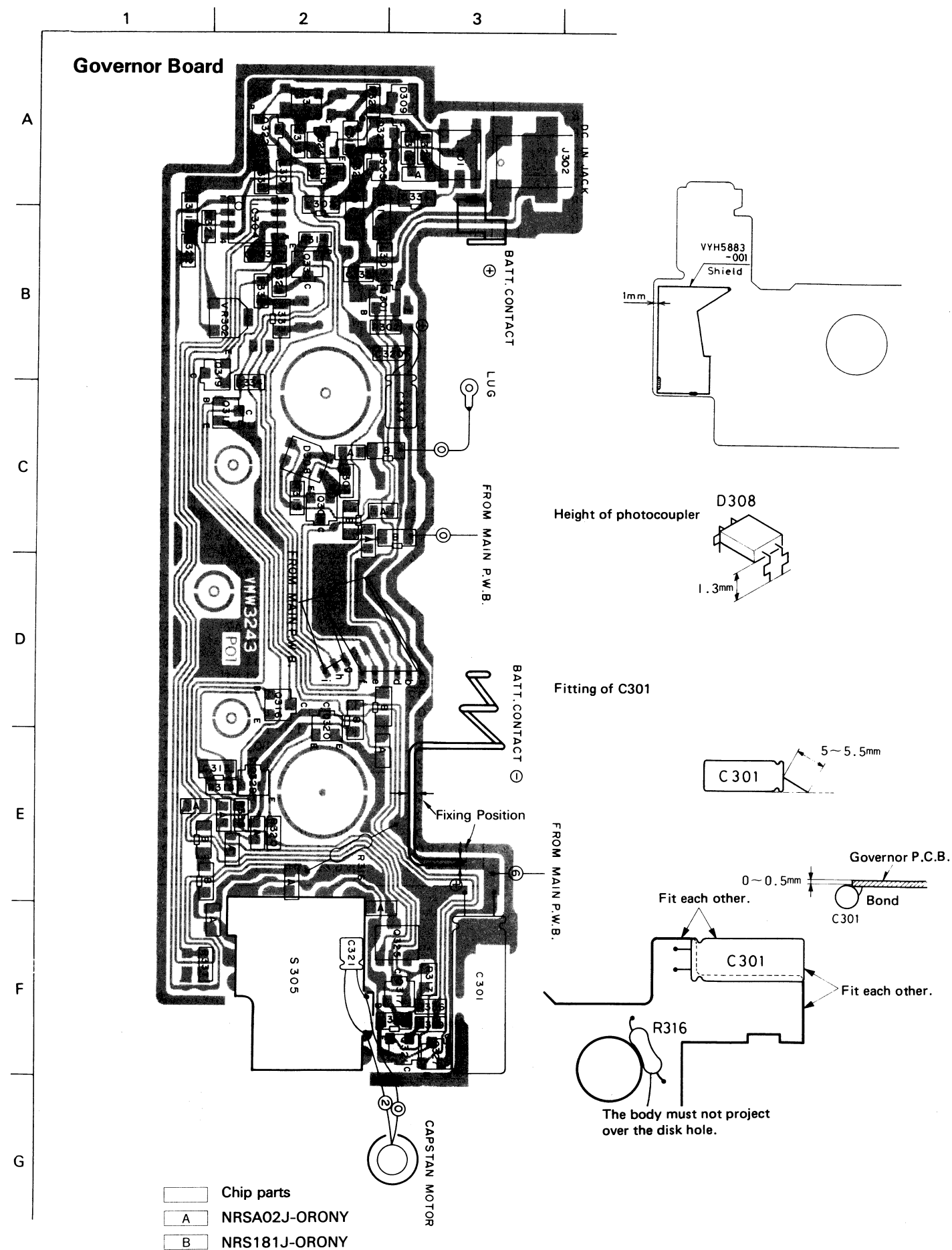
When replacing those parts, make sure to use the specified one.

REF. NO	PARTS NO.	PARTS NAME
R112	NRS181J-223NY	MG RESISTOR
R113	NRS181J-103NY	MG RESISTOR
R201	NRSA02J-391NY	MG RESISTOR
R202	NRSA02J-152NY	MG RESISTOR
R203	NRSA02J-122NY	MG RESISTOR
R204	NRSA02J-184NY	MG RESISTOR
R205	NRSA02J-472NY	MG RESISTOR
R206	NRSA02J-333NY	MG RESISTOR
R207	NRSA02J-332NY	MG RESISTOR
R208	NRSA02J-473NY	MG RESISTOR
R209	NRSA02J-224NY	MG RESISTOR
R210	NRSA02J-824NY	MG RESISTOR
R211	NRSA02J-180NY	MG RESISTOR
R212	NRS181J-223NY	MG RESISTOR
R213	NRSA02J-103NY	MG RESISTOR
R301	NRSA02J-101NY	MG RESISTOR
R303	NRSA02J-332NY	MG RESISTOR
R304	NRSA02J-225NY	MG RESISTOR
R305	NRSA02J-104NY	MG RESISTOR
R306	NRSA02J-100NY	MG RESISTOR
R308	NRSA02J-122NY	MG RESISTOR
R309	NRSA02J-101NY	MG RESISTOR
R310	NRSA02J-390NY	MG RESISTOR
R311	NRSA02J-390NY	MG RESISTOR
R312	NRSA02J-180NY	MG RESISTOR
R313	NRSA02J-180NY	MG RESISTOR
R323	NRSA02J-102NY	MG RESISTOR
R324	NRS181J-102NY	MG RESISTOR
R328	NRS181J-470NY	MG RESISTOR
R330	NRSA02J-104NY	MG RESISTOR
R331	NRSA02J-472NY	MG RESISTOR
S001	NSS7A22-001AZ	S SWITCH
S301	NSS7A22-001AZ	S SWITCH
S302	QSS1A13-V01	SLIDE SW
S303	NSS7A23-001AT	S SWITCH
TC02	NAT1110-100AZ	T.CAPACITOR
TC03	NAT1110-100AZ	T.CAPACITOR
TC04	NAT1110-100AZ	T.CAPACITOR
T01	VQT5F23-101T	IFT
T02	VQT5F23-101T	IFT
T03	VQT5A23-101T	IFT
T04	VQT5A24-301T	IFT
VR01	NVP1402-103NZ	V RESISTOR
VR02	VGZ0004-013	V.RESISTOR
VR03	NVP1402-103NZ	V RESISTOR
VR301	VGZ0004-012	V.RESISTOR

Other P.C. Boards
Switch P.C. Board

Location of
FF/REW switch
VYH6274-001

Location of
FWD/REV PLAY switch terminal
VYH6272-001

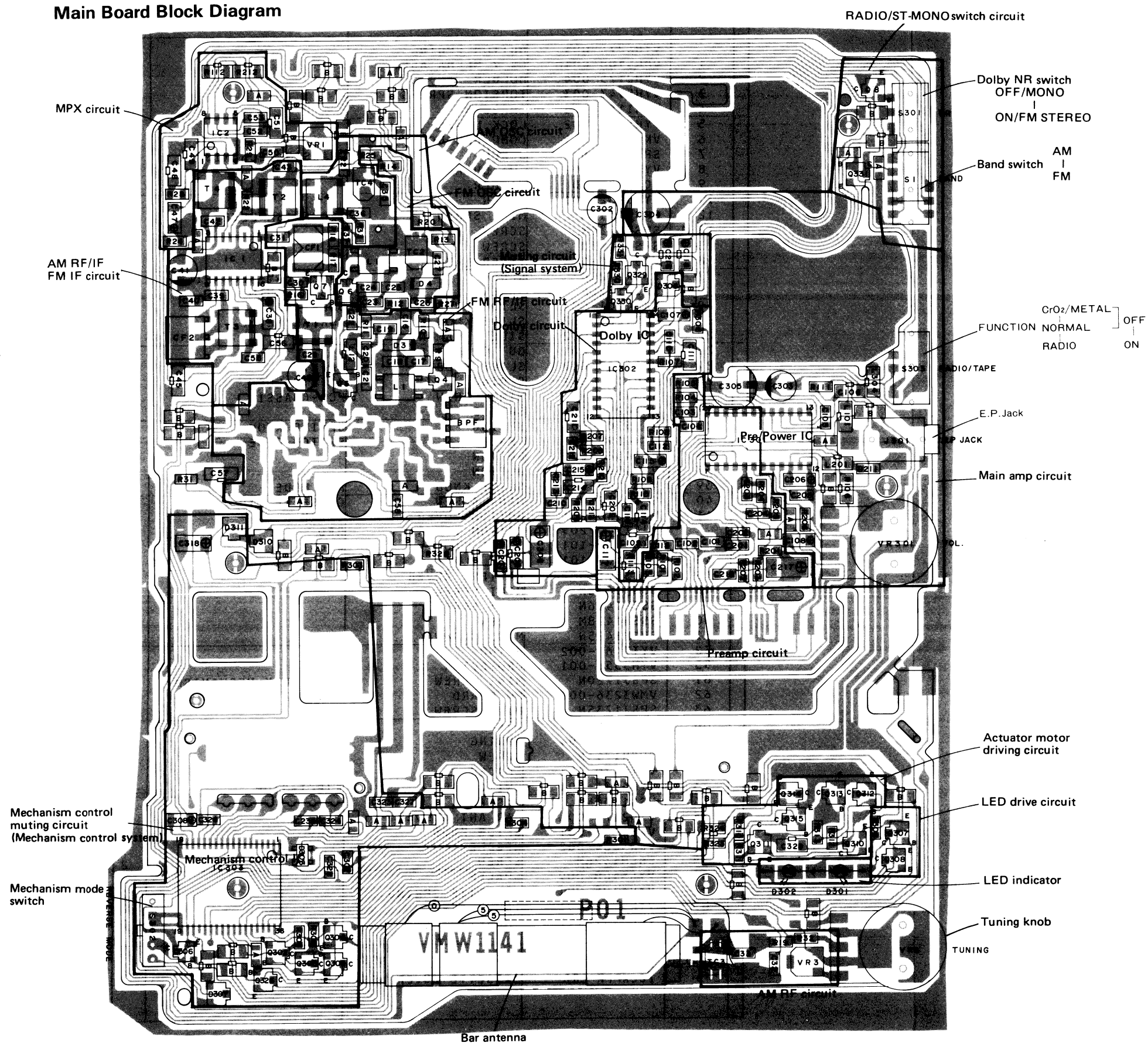
**Governor Board Parts List**

△ Parts are safety assurance parts

When replacing those parts, make sure to use the specified one.

△ REF. NO	PARTS NO.	PARTS NAME	DESCRIPTION
C301	QET40GR-477S	E CAPACITOR	470MF +30:-10%
C310	NEF10GM-335RY	TS E CAPACITOR	
C311	NEF11CM-474RY	TS E CAPACITOR	
C312	NCB21HK-102AY	C.CAPACITOR	
C313	NCB21HK-103AY	C CAPACITOR	
C314	QEF80GM-106X	TS E CAPACITOR	10MF 20%
C315	QCF81HZ-104Y	C.CAPACITOR	.10MF +80:-20% 50V
C316	QEF80GM-106X	TS E CAPACITOR	10MF 20%
C317	NEF11CM-105RY	TS E CAPACITOR	
C319	NCS21HJ-471AY	C.CAPACITOR	
C320	NCB21HK-332AY	C.CAPACITOR	
C321	QE20100-105M	E CAPACITOR	1.0MF
C329	NCB21EK-273AY	C CAPACITOR	
C330	NCB21EK-273AY	C CAPACITOR	
C331	QCY81EK-473Y	C CAPACITOR	.047MF 10% 25V
C332	QCF81HZ-104Y	C.CAPACITOR	.10MF +80:-20% 50V
C333	NCB21HK-103AY	C CAPACITOR	
C334	QER40GM-226M	E CAPACITOR	22MF 20%
D304	MA3120MX-VI	ZENER DIODE	
D305	SB05-05CP-TB	S K DIODE	
D308	ON2170(Q)LF	PHOTO COUPLER	
D309	MA704AX	S K DIODE	
IC304	AN6612S-T1	IC	
J302	QMA0121-001	DC JACK	
L301	VQH2001-009Z	OSC COIL (BIAS)	
L302	VQP1003-270Y	INDUCTOR	
L303	VQP1003-270Y	INDUCTOR	
L305	TAC000493-01	INDUCTOR	
Q301	2SA1362GR-TE85L	TRANSISTOR	
Q309	2SC3859-TB	TRANSISTOR	
Q316	2SA1037K(R)T96	TRANSISTOR	
Q317	2SA1037K(R)T96	TRANSISTOR	
Q318	2SA1037K(R)T96	TRANSISTOR	
Q319	2SA1037K(R)T96	TRANSISTOR	
Q320	2SB970(Q,R)X	TRANSISTOR	
Q321	2SB970(Q,R)X	TRANSISTOR	
Q322	2SD601(Q)W	TRANSISTOR	
Q323	2SD1048X7-T-TB	TRANSISTOR	
Q324	2SA1179M.6TB	TRANSISTOR	
Q325	2SA1314(B)TE12R	TRANSISTOR	
Q327	2SD1328(S,T)X	TRANSISTOR	
Q328	2SD1328(S,T)X	TRANSISTOR	
Q332	DTA114TKT96	TRANSISTOR	
R302	NRSA02J-104NY	MG RESISTOR	
R307	NRSA02J-105NY	MG RESISTOR	
R314	NRSA02J-104NY	MG RESISTOR	
R315	NRSA02J-471NY	MG RESISTOR	
R316	ERS-B24JR15BV	MF RESISTOR	
R317	NRSA02J-473NY	MG RESISTOR	
R318	NRSA02J-473NY	MG RESISTOR	
R319	NRSA02J-390NY	MG RESISTOR	
R320	NRSA02J-390NY	MG RESISTOR	
R321	NRSA02J-103NY	MG RESISTOR	
R322	NRSA02J-821NY	MG RESISTOR	
R325	NRSA02J-471NY	MG RESISTOR	
R326	NRSA02J-391NY	MG RESISTOR	
R329	NRSA02J-104NY	MG RESISTOR	
R332	NRSA02J-104NY	MG RESISTOR	
R333	NRS181J-152NY	MG RESISTOR	
R334	NRSA02J-152NY	MG RESISTOR	
R335	NRSA02J-123NY	MG RESISTOR	
R336	NRSA02J-123NY	MG RESISTOR	
R337	NRSA02J-5R6NY	MF RESISTOR	
S304	VSUS001-001	SLIDE SWITCH	
VR302	NVP1402-502NZ	V.RESISTOR	

Main Board Block Diagram



Location of Spacer on Switch P.C. Board

**Adjust the switch location to be in the center.
(To secure normal switch operation)**

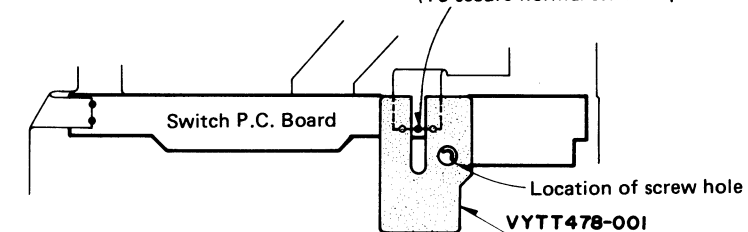
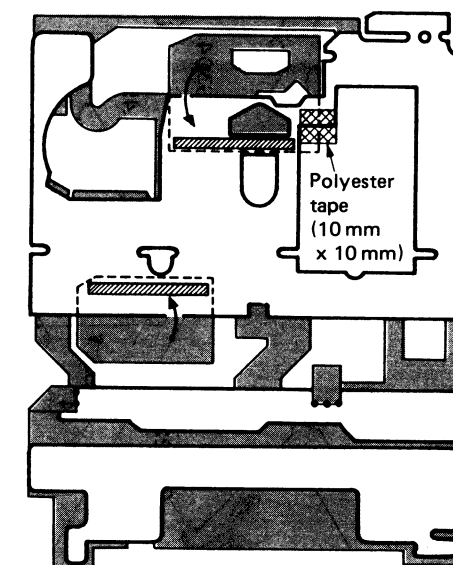


Fig. 6-4

Resin spacer
(Soldered terminal on the folded main board)
(For shorting prevention)



-  Both sides adhesive tape
 in the direction of the arrow mark.
 Fold the flexible board
 Aluminum part

Fig. 6-5

Wiring on Switch board

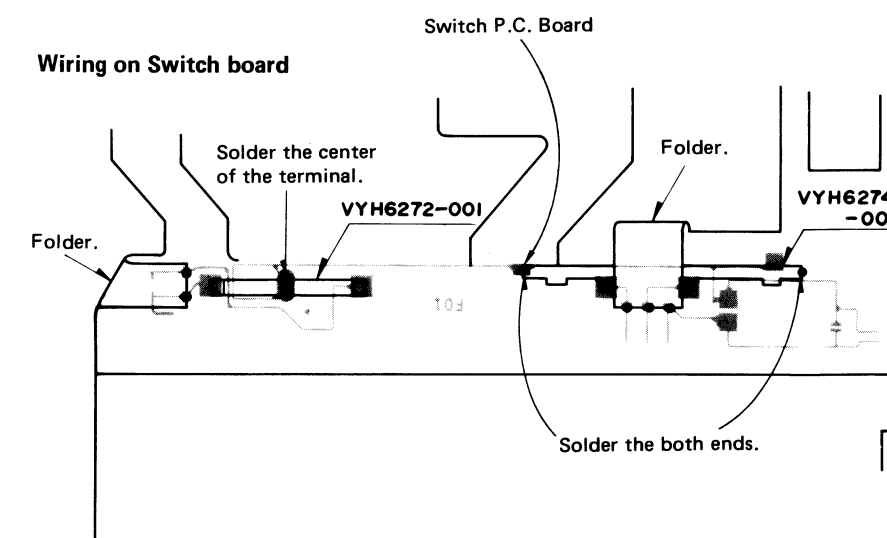
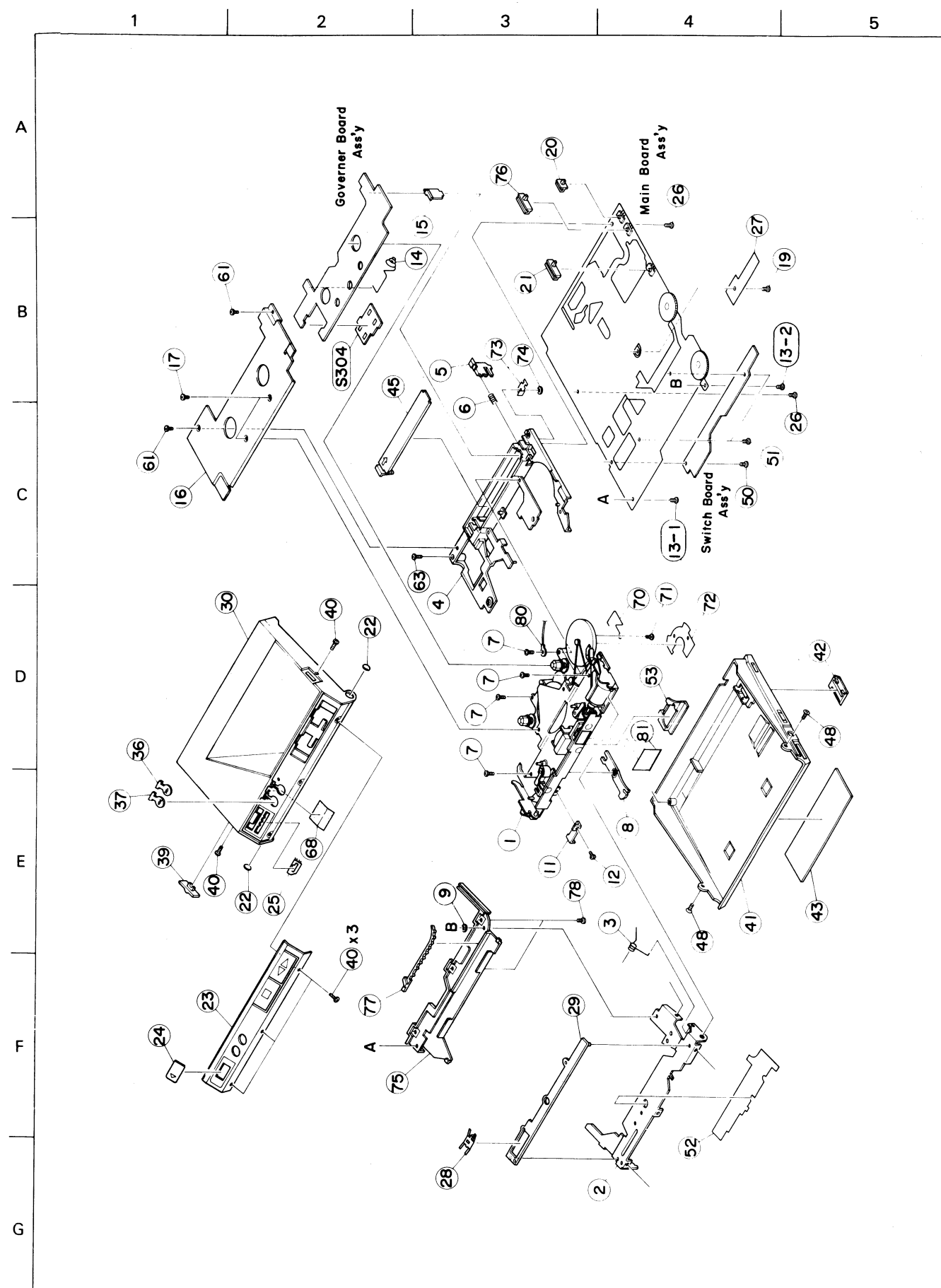


Fig. 6-6

7

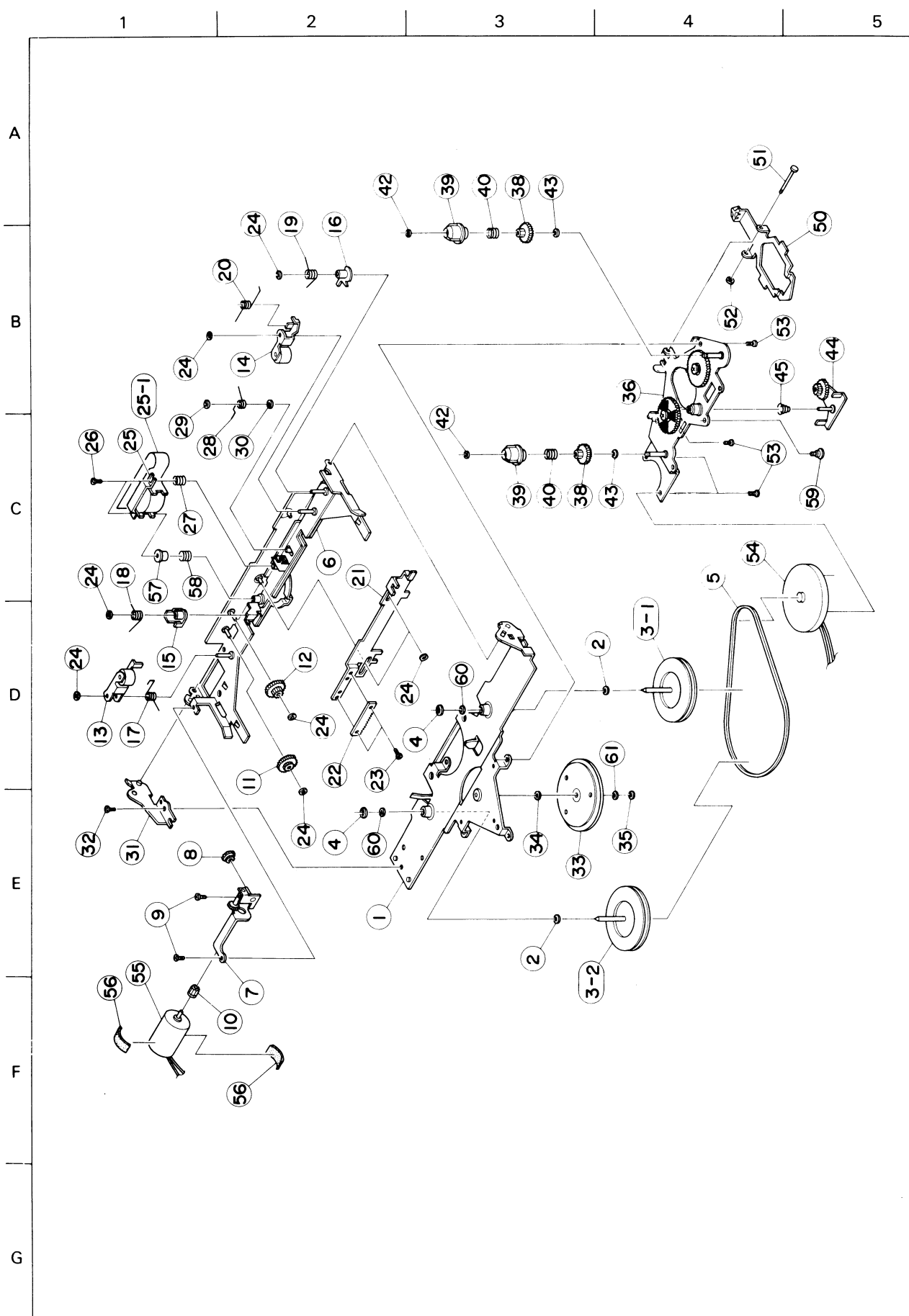
Exploded view of Enclosure Assembly and Parts List



△ Parts are safety assurance parts
When replacing those parts, make sure to use the specified one.

△ REF.	PARTS NO.	PARTS NAME	REMARKS	Q'TY
1	VYH6274-001	BUTTON SPRING		1
2	VDL5108-001M	CX-7 MECHA ASSY		1
3	VYH2175-004	HOLDER		1
4	VYH5943-003	TORSION SPRING		1
5	VYH1154-003	CHASSIS		1
6	VYH5885-002	LOCK LEVER	CHASSIS-MECHANISM	1
7	VKW3001-181	COMP.SPRING		1
8	SPSJ1435M	SCREW		4
9	VYH3354-002	SWITCH ARM		1
11	Q03093-830	WASHER		1
12	VYH5982-001	LEVER	MECHANISM-LEVER	1
13-1	SPSK1414M	MINI SCREW		1
13-2	SPSK1730M	SCREW		1
16	SPSK1735M	SCREW		1
17	VJD2280-006	INNER LAY		1
19	SPSK1720N	SCREW	INNER LAY-MECHANISM	2
20	SPSK1720N	SCREW	PCB-MECANIM	1
21	VXS4201-001	SLIDE KNOB	DOLBY NR	1
22	VXS4201-002	SLIDE KNOB	NORMAL/METAL	1
23	VJD5010-002	SIDE ORNAMENT		2
24	VJD3615-001	BUTTON PLATE		1
25	VXS4203-002	SLIDE KNOB	SAFETY SAFETY LOCK PCB-CHASSIS	1
26	VYH6191-001	SPRING		1
27	SSSJ1735N	MINI SCREW		2
28	VMA4297-001	SHIELD		1
29	VYH5904-003	SPRING	SLAIDE KNOB	1
36	VYH6193-001	SPACER	SWITCH GIDE	1
37	VXP4561-001	BUTTON		1
39	VXP4561-002	BUTTON		1
40	VXS4168-003	SLIDE KNOB	REV MODE	1
41	SPSH1425N	MINI SCREW	CASSETTE LID	5
42	VJC1540-201	BOTTOM COVER	BLACK	1
43	VJC1540-209	BOTTOM COVER	RED	1
45	VXS4200-101	SLIDE KNOB	EJECT	1
48	VYN5109-101	NAME PLATE		1
50	VJC3091-002	BATTERY COVER		1
51	SSSH1416N	MINI SCREW		1
52	SSSH1416N	MINI SCREW		1
53	SSSH1428M	SCREW		1
61	SPSH1425N	MINI SCREW		2
62	VYTT468-002	BLIND		1
63	VYH3356-001	PROTECTOR		1
68	SPSJ1720N	MINI SCREW	INNER LAY-MECHANISM	2
70	VMW3236-002	PW BOARD	CONTACT	1
71	SPSJ1735N	MINI SCREW		1
72	VYTT480-001	SPACER		1
73	VYH6115-004	SPRING	EJECT-STOP	1
74	SPSH1714N	SCREW		1
75	VYTT470-001	SPACER	MOTOR	1
76	VYH6114-001	SWITCH ARM	EJECT-STOP	1
77	WSS1400N	WASHER		1
78	VYH2173-004	BAR ANT HOLDER	BAND	1
81	VXS4221-001	SLIDE KNOB		1
82	VJN3004-002	NEEDLE		1
83	SSSH1428M	SCREW		2
84	VYSS1R8-009	SPACER		1
85	VYH6195-001	CASSETTE SPRING		1
86	VYH5942-001	TAP PLATE		2
87	VJK2151-101	CASSETTE LENS		1
22~25,30,36,37,68,82-84	7CCXF7K-CBK	CASSETTE COVER ASS'Y	BLACK	
	7CCXF7K-CRD	CASSETTE COVER ASS'Y	RED	

8 Exploded view of Mechanism Assembly



△ Parts are safety assurance parts

When replacing those parts, make sure to use the specified one.

△ REF.	PARTS NO.	PARTS NAME	REMARKS	QTY
1	Q03093-835	WASHER		2
2	VKL2256-00H	CHAS.BASE ASY		1
3-1	Q03093-830	WASHER		2
3-2	VKF3139-00D	FLYWHEEL ASS'Y		1
	VKF3139-00E	FLYWHEEL ASS'Y		1
4	WDM153125	SLIT WASHER		2
5	VKB3000-099	BELT		1
6	VKL2258-00J	SUB.CHAS.ASY		1
7	VKL3713-00A	A.BRACKET ASS'Y		1
8	VKS4821-001	A GEAR 3		1
9	SPSK1416M	MINI SCREW		2
10	VKS4822-002	A GEAR(1)		1
11	VKS4823-001	A GEAR(4)		1
12	VKS4824-001	A GEAR(5)		1
13	VKP4173-00D	P.R.ASS'Y	FWD	1
14	VKP4176-00D	P.R.ASS'Y	REV	1
15	VKS4825-002	P.ROLLER LEVER	FWD	1
16	VKS4826-003	P.ROLLER LEVER	REV	1
17	VKW4571-001	TORSION SPRING	FWD P.ROLLER	1
18	VKW4572-004	TORSION SPRING	FWD P.ROLLER	1
19	VKW4573-002	TORSION SPRING	REV P.ROLLER	1
20	VKW4574-003	TORSION SPRING	REV P.ROLLER	1
21	VKL3715-003	SLIDER		1
22	VKS4827-001	RACK		1
23	VKZ4329-001	MINI SCREW		2
24	WDL122525-4	SLIT WASHER		7
25	VGH0444-009	P.B.HEAD ASS'Y		1
26	SPSH1725N	SCREW		2
27	VKW4577-001	COMP.SPRING		1
28	VKW4578-006	TORSION SPRING	HEAD LEVER	1
29	WDL163525-4	SLIT WASHER		1
30	Q03093-630	WASHER		1
31	VKL5936-00G	S.C.BRACKET	ASS'Y	1
32	SPSK1716M	SCREW		1
33	VKR3131-00E	MAIN PULLY ASSY		1
34	Q03093-848	WASHER		1
35	WDL082019-9	SLIT WASHER		1
36	VKL2261-00B	REEL BASE ASY		1
38	VKR4443-001	REEL GEAR		2
39	VKR3133-001	REEL FEATHER		2
40	VKW4580-001	COMP.SPRING		2
42	WDL122525-4	SLIT WASHER		2
44	VKL5938-00B	MID.LEVER ASS'Y		1
45	VKW4579-002	COMP.SPRING		1
50	VKL3716-003	ELEVATOR		1
51	VKH4859-001	SHAFT		1
52	WDL082025-4	SLIT WASHER		2
53	SPSK1716M	SCREW		4
54	FN26AB	C.MOTOR		1
55	TWS-154	A.MOTOR		1
56	VYSA1R4-031	SPACER		2
57	VKH4878-001	HEAD COLLER		1
58	VKW4596-002	COMP.SPRING	FOR HEAD	1
59	VKZ4357-001	SCREW		1
60	VKZ4035-002	WASHER		2
61	VKZ4035-003	WASHER		1

9 Packing and Packing Parts List

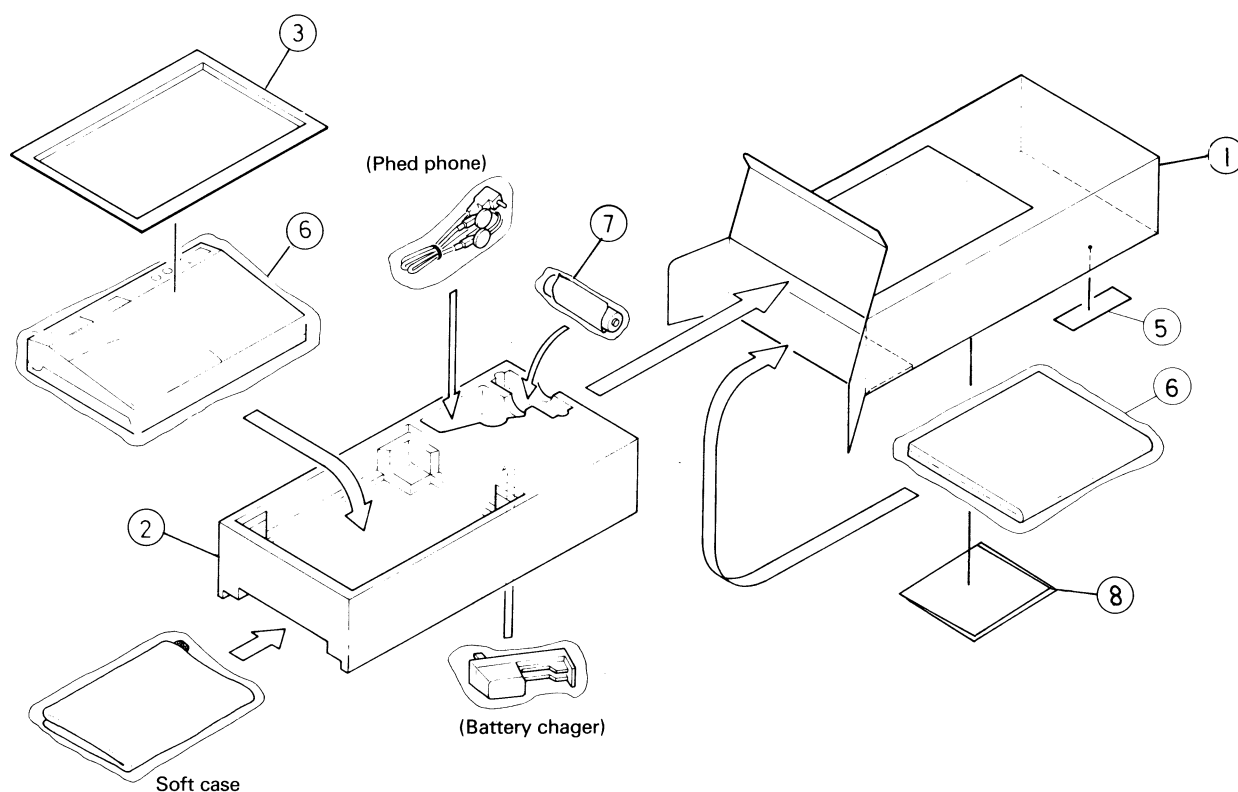


Fig. 10-1

Packing Parts List

⚠ Parts are safety assurance parts

When replacing those parts, make sure to use the specified one.

	Ref. No.	Parts No.	Parts Name	Description	Q'ty
	1	VPC5109-011	Carton	J version	1
	"	" -021	"	U version	1
	"	" -031	"	C version	1
	2	VPH2282-001	Cushion		1
	3	VPH2170-001	Spacer		1
	5	VNC5003-005	Serial Label		1
	6	QPGA012-02505	Poly Bag	for Unit and Instruction	2
	7	QPGA007-01003	"	for Battery	1
	8	E66416-003	Envelope	for Warranty (J/U version, PX, EES)	1

10 Accessories

⚠ Parts are safety assurance parts

When replacing those parts, make sure to use the specified one.

	Parts No.	Parts Name	Description	Q'ty
	VNN5109-612	Instruction Book	J/C version	1
	" -801	"	U version	1
	BT20047C	Warranty Card	J/U version	1
	BT20046B	Special Reply Card	J/U version	1
	BT20025H	Warranty Card	C version	1
	BT20071A	SVC Center List	C version	1
	VNA1001-021	Customers Card	# 1—1000 (J, version)	1
	VNA1001-022	"	# 1—500 (C, version)	1
	" -023	"	# 1—500 (C, version)	1
	" -024	"	" (B, version)	1
	" -025	"	" (G, version)	1
	VNC5311-204	Caution Card	U version for EES	1
	" -204	"	U version for PX	1
	VJY4021-001	Headphones		1
	VGB0015-003	Battery Charger	J version (120V)	1
	" -004	"	C version (120V)	1
		"	B version (240V)	1
		"	E/G version (220V)	1
		"	U version (120V)	1
	VGZ0061-001	Battery	Rechargeable Type	1
	VJB3019-001	Soft Case		1

JVC

VICTOR COMPANY OF JAPAN, LIMITED.

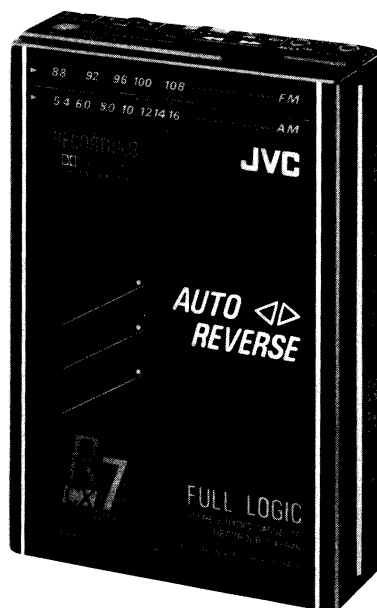
AUDIO PRODUCTS DIVISION MAEBASHI PLANT 10-1, 1-chome, Ohwatari-cho, Maebashi-city 371, Japan

JVC

SERVICE MANUAL

STEREO RADIO CASSETTER

MODEL CX-R7K



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1 Continuity Test at Overhaul

■ Auto-stop function

When the governor P.C. board is removed from the mechanism section, the auto-stop function becomes in operation since the hall IC circuit is activated in this condition.

To release the auto-stop operation in this state, shortcircuit between the two roundings on the governor P.C. board with a short wire and the like. (See the figure below.)

Make sure to remove the wire after checkup or servicing.

■ Tape detection switch

Without a tape loaded, the motor does not rotate on account of the function of the tape detection switch.

To rotate the motor without tape loaded, shortcircuit the two roundings on the governor P.C. board by soldering. (See the figure below.)

Make sure to unsolder after checkup or servicing.

■ REC safety (erroneous recording prevention) function

To release this function (to make the set in recording mode with a cassette having no REC safety tab, or, without a cassette loaded), shortcircuit the two roundings on the governor P.C. board by soldering. (See the figure below.)

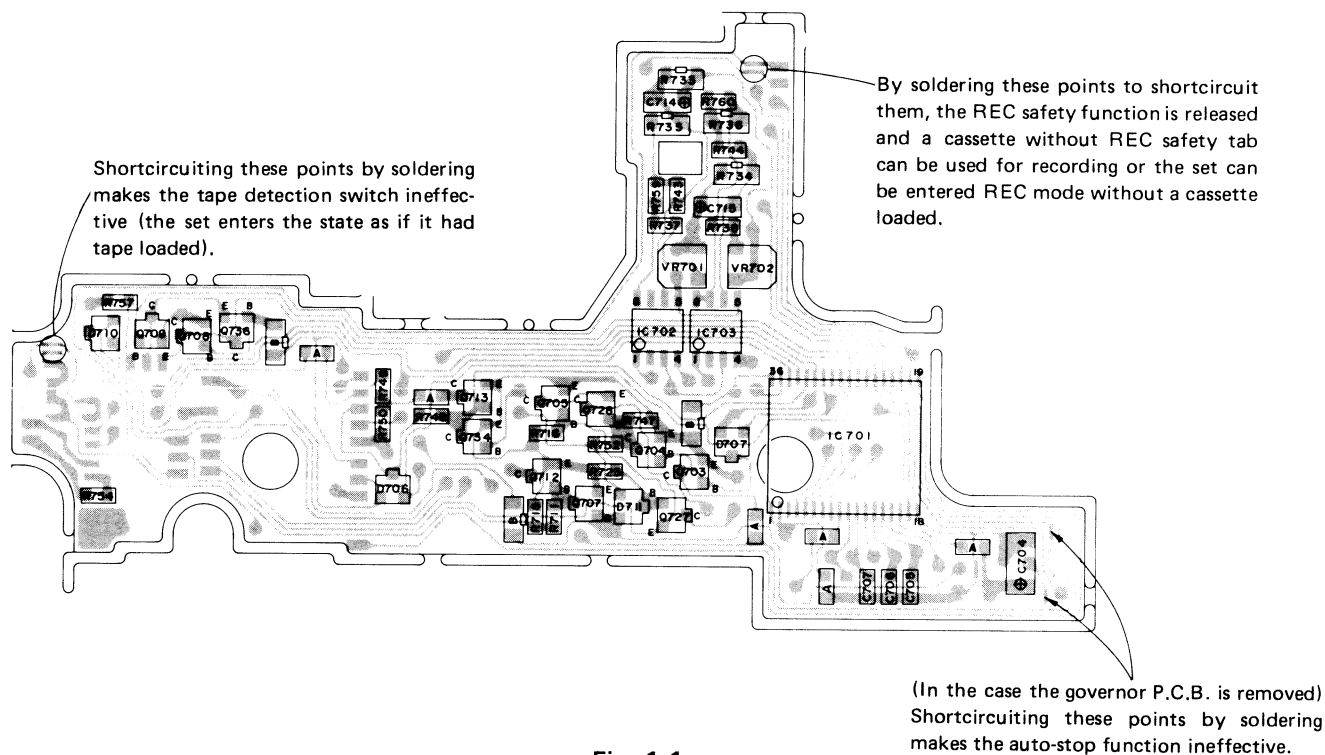


Fig. 1-1

■ Function of operation switches (keys)

1. Relating to the radio and the **RADIO** key

- 1) **RADIO** key is not an ON/OFF key but a source selection key. To stop the radio, press the **STOP** key.
- 2) In radio reception, pressing the **◀▶** key shifts the mode to FWD Play.
- 3) Pressing the **RADIO** key shifts the set mode for radio reception except in the mode of recording with a microphone.
- 4) In the FF/REW mode, pressing the **RADIO** key stops the mechanism operation and enters the set into the radio reception mode.
- 5) If the **STOP** key is pressed in radio reception, only the recording stops, while, radio reception continues. By pressing the **STOP** key once again, radio reception is turned off. (Depressing the **STOP** key for a while stops the mechanism operation and turns off the radio at the same time.)
- 6) Pressing the FF/REW key in radio reception turns off the radio and shifts the set's mode into FF/REW.

Note: STOP key is given priority to all other keys.

2. Relating to recording

- 1) For recording, press the **◀▶** key a moment after depressing the **○** key (two keys are pressed).
- 2) Recording can be started only when the radio is turned on or the tape is in the STOP mode.
Stop → Recording → Recording through the mic.
Radio reception → Recording → Recording of broadcast received.
- 3) Confirmation of recording:
It can be checked by observing lighting conditions of LEDs (see the following table) or by monitoring recording source.
(When only the LED of FWD or REV lights, the set is in playback mode.)
- 4) Recording is performed in the FWD/PLAY mode without regard to **⏮**, **⏪**, **⏩** mode indication.
All the recording operations stop by the auto-stop function except in the RADIO REC mode, in which only recording stops leaving the radio in receiving mode.

3. Safety lock switch

When this switch is set to the LOCK side, all operation keys become inoperative.

4. Pause switch

- 1) This set enters the pause mode even in FWD/REV and FF/REW operations by stoppage of motor rotation since an electrically pausing system is adopted in this model.
- 2) When the pause switch is turned on, every operation key becomes inoperative.

5. Lighting modes of LEDs

	RADIO	FWD	REV
FWD PLAY/FF		○	
REV PLAY/REW			○
MIC REC		○	○
RADIO	○		
RADIO REC	○	○	○

- **Battery check:** Replace the battery if the FWD and REV LEDs do not light in the corresponding operation.

2 Removal of Main Parts

■ Removal procedure of main parts (in relation to other parts to be removed at the same time)

Proceed parts removal in the order shown in the following table, and refer to the following explanations for details.

Other parts to be removed Objective parts to be removed	Cassette door	Stabilizer	Bottom cover	Operation panel	SW P.C.B.	Inner lay (ornament)	Dial cover	Main P.C.B.	Mechacon P.C.B.	Reel unit	SC bracket
Bottom cover, Inner lay Stabilizer	1										
Pinch roller, E. head, Head replacement	1	2									
Head P.C.B., Operation panel	1		2								
SW P.C.B.	1		2	3							
Bar antenna	1		2	3	4						
Main P.C.B., Dial indicator	1		2	3		4	5				
Mechacon P.C.B., ACT motor	1		2	3		4	5	6			
Belt, Flywheel, Mechanism ass'y, Reel motor	1		2	3		4	5	6	7		
Main pulley	1		2	3		4	5	6	7	8	
Mechanism chassis	1		2	3		4	5	6	7		8
Sub chassis	1										2

■ Cassette cover

- Slide the eject button in the direction of the arrow mark and open the cassette door.
- Remove the two screws (1) from the both sides of the door cover.
- Remove the door cover.

Then, adjustment and replacement of the R/P head can be performed.

Note: If two screws (6) and (10) are removed, the cassette cover can be removed as the bracket is still fixed. For removing the cover, press it in the direction of the DC jack.

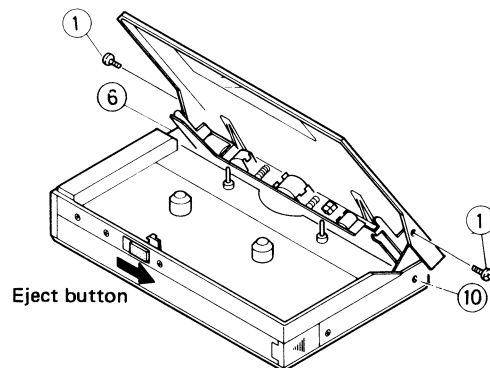


Fig. 2-1

■ Ornament (Inner lay)

Remove the two screws (4) securing the inner lay.

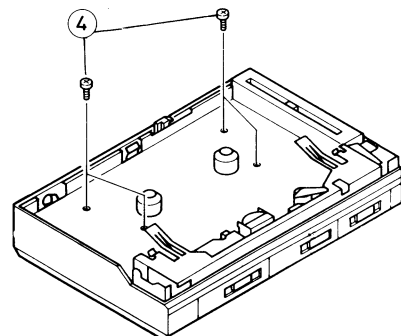


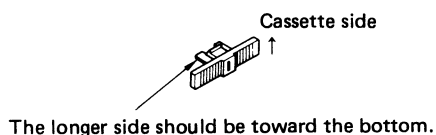
Fig. 2-2

■ Bottom cover

Caution: When removing the screw (7), remove the battery and the adaptor beforehand for avoiding short-circuit between plus (+) and minus (−) circuits.

1. Remove the cassette cover.
2. Remove the ornamental inner lay.
3. Remove three slide knobs (REVERSE MODE, DOLBY NR and MIC).

Note: How to re-assemble the knob:



4. Remove the six screws (5), (6), (7) securing the bottom cover.
5. Remove the screw (8) from the bottom.
6. Extend the eject lever outwards and remove it. At this time the fitting which is set with the screw (5) is comes off.

When the eject button is not removed, extend the bottom cover to remove it.

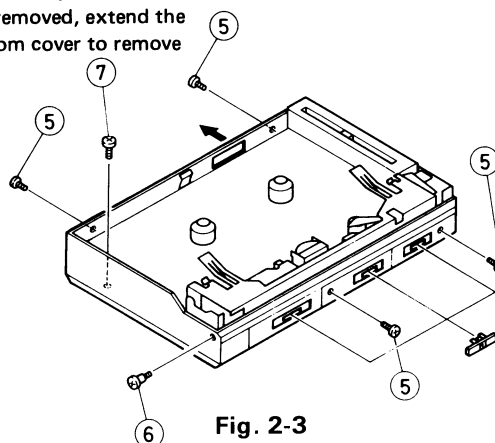


Fig. 2-3

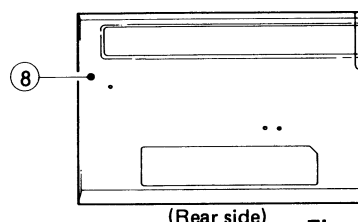


Fig. 2-4

By removing the screw (6), the bracket can be removed.

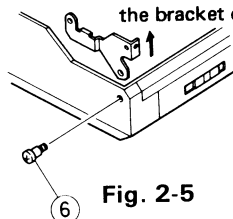
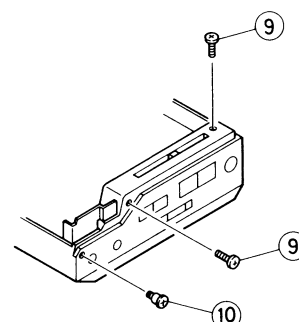


Fig. 2-5

■ Operation panel

1. Remove the band select slide knob.
2. Remove the three screws (9) and (10) securing the operation panel.
3. Remove the push button as it is pressed.
 - At this time, the RADIO ON button comes off.
 - The screw (10) is set together with the bracket.
 (The longer end of the knob should be set in the direction of the cassette cover.)



The bracket can be removed.

Fig. 2-6

■ Dial indicator

Remove the two screws (11) securing the cover.

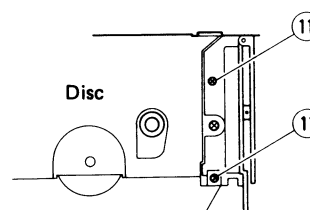


Fig. 2-7

■ Operation P.C. Board Ass'y

1. Remove the two screws (12).
2. Then, the safety lock button can be removed.

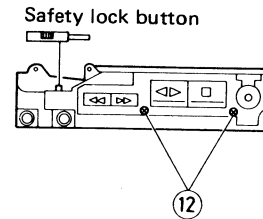


Fig. 2-8

■ Main P.C. Board

1. Remove the five screws (13) and (14) securing the main P.C. board ass'y.
2. Take off the spacer for arranging wires.

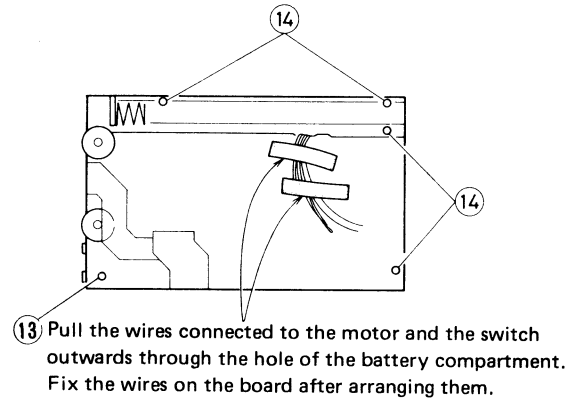


Fig. 2-9

■ Governor P.C. board

Remove the four screws (15) and (16).

- How to re-assemble Governor P.C. Board

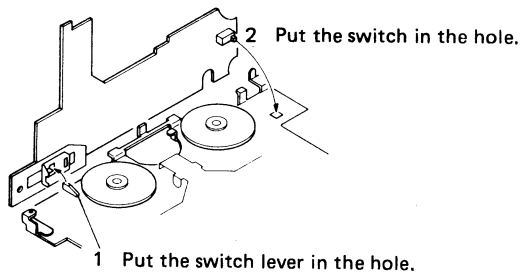


Fig. 2-11

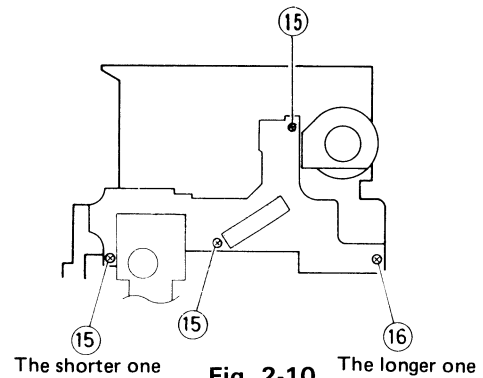


Fig. 2-10

■ Stabilizer (cassette spring)

Remove the four screws (2).

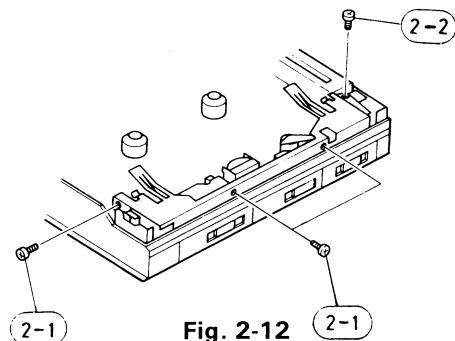


Fig. 2-12

■ Eject button

1. Remove the two screws (3).
2. Then, the spring inside the button comes off.
3. For re-assembling, refer to the figure on the right hand.

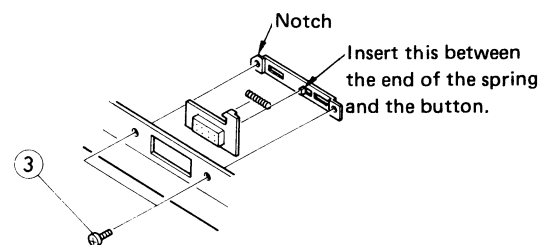


Fig. 2-13

■ Wire arrangement

1. For arranging the wires of the actuator motor, bundle and twist them, and place them under the governor P.C. board not to touch the flywheel.
2. Wires of the capstan motor and the REC safety switch must be arranged by twisting them respectively and place them on the pattern side of the main P.C. board along the edge of the board.

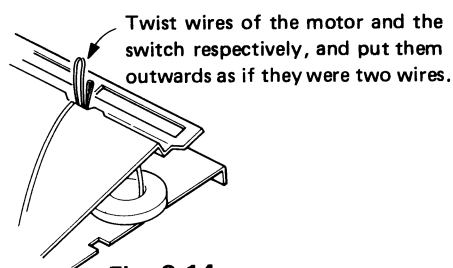


Fig. 2-14

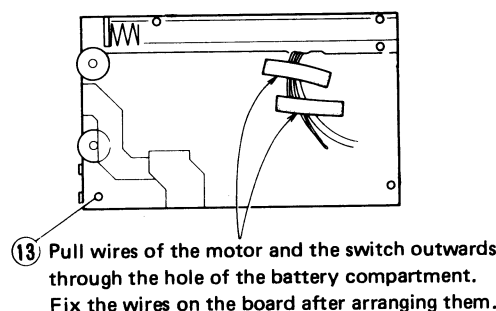


Fig. 2-15

■ How to set the dial indicator

1. Turn the dial in the direction of low frequency.
2. Set the gear's concave mark (○ mark - depression part) and the right end of the indicator gear each other. Check that the left end of the indicator gear is set well with the chassis edge.

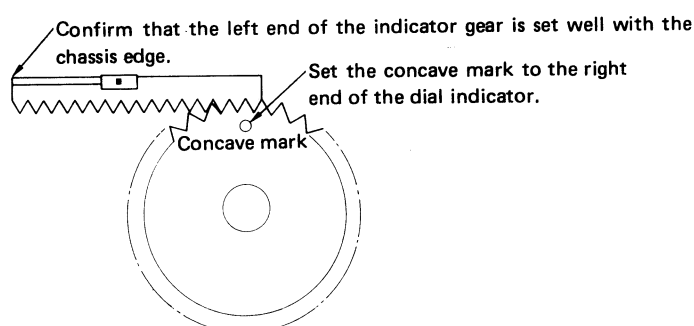


Fig. 2-16

■ Mechanism ass'y

1. Disconnect wires connecting the main board to the head board and the actuator motor from the main board.
2. Disconnect wires connecting the governor board to the capstan motor and the main board from the governor board.

■ Reel unit ass'y

Remove three screws (20) and (21) securing the mechanism ass'y. Then, disengage the elevator's gear from the main pulley.

■ Sub chassis

Remove a screw (22) securing the sub chassis to the mechanism ass'y, and remove the SC bracket.

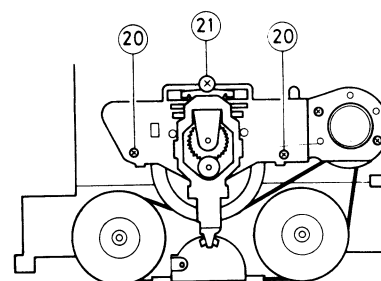


Fig. 2-17

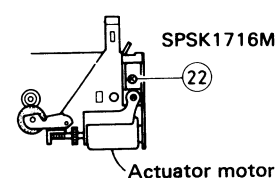


Fig. 2-18

3 Technical Information on Operation Principle

1. Principle of operation

The mechanism control system of this model functions to determine one of six operation modes (1. FWD REC [normal recording], 2. FWD PB [playback in normal direction], 3. FWD FF [fast forward in normal direction], 4. STOP, 5. F. REV [fast rewind], 6. REV PB [playback in reverse direction]) according to settings of the cam's position and the flip-flops inside the IC.

There are four cam positions, viz. **REC** (normal recording), **F** (normal playback), **S** (stop and fast forward), and **R** (reverse playback). Every position determines and sets the gear ratio, necessity of clutch and pinch roller operations. In addition, the switch (S304) synchronizing with the cam determines rotating direction of the capstan motor.

There are two flip-flops which also determine the rotating direction of the capstan motor; one is for ▷▷ (normal direction) and the other for ◁◁ (reverse direction).

Table 1 shows relationship between cam positions and flip-flop settings by operation mode.

By key operation, the mechanism control IC (M51556P) totally controls the operation mode such as to rotate the actuator motor in the normal or reverse direction and to stop it, and to set or reset the flip-flops inside the IC.

Table 1 Relationship between cam positions and flip-flop operation by operation mode

Cam position	Condition of the mechanism	Flip-flop operation	Capstan motor rotation	Operation mode (Symbol)
REC	- Low gear - Clutch operation E. head set forward - Pinch roller contact		FWD	FWD REC (○ mode)
F				PB (▷ mode)
				FF (▷▷ mode)
S	- High gear - No clutch operation - Pinch roller released from contact	▷▷ flip-flop is set.	STOP	
		Both flip-flops are reset.		STOP (□ mode)
		◁◁ flip-flop is set.		F. REV (◁◁ mode)
R	- Low gear - Clutch operation - Pinch roller contact		REV	REV PB (◁ mode)

2. Operation of the mechanism control IC (M51556P)

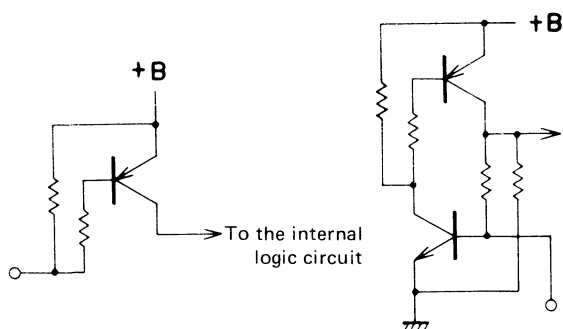
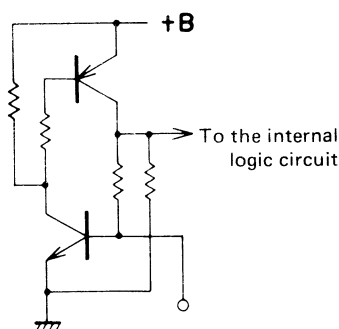
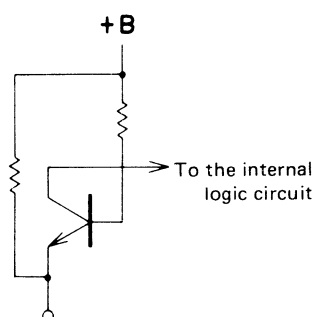
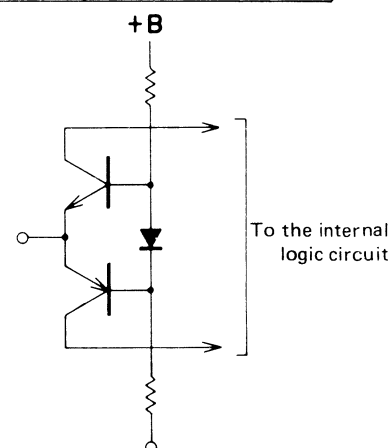
1) Input/Output ports and their functions

Table 2 Output ports

Pin No.	Symbol	Function	Port type	Active value
23	$\overline{\text{C. MOTOR FWD}}$	Rotates the capstan motor in the normal direction.	Open collector	L
24	$\overline{\text{C. MOTOR REV}}$	Rotates the capstan motor in the reverse direction.	"	L
26	FWD LED	Turns on the FWD LED (indicating normal rotation).	"	H
27	REV LED	Turns on the REV LED (indicating reverse rotation).	"	H
28	MUTE	For muting output in the FF mode	"	H
29	$\overline{+B \text{ SW}}$	Stops FF operation in the PB mode.	"	L
30	$\overline{\text{CD}}$	Turns on the converter's source power.	"	L
31	$\overline{\text{OP}}$	For muting when the actuator motor is in operation.	"	L
32	$\overline{\text{REV}}$	For switchover of the amplifier's output in REV PB mode	"	L
33	$\overline{\text{A. MOTOR FWD}}$	Rotates the actuator motor in the normal direction.	"	L
34	$\overline{\text{A. MOTOR REV}}$	Rotates the actuator motor in the reverse direction.	"	L

Table 3 Input ports

Pin No.	Symbol	Function	Port type	Active value
4		Command of FF operation (in the normal direction)	See Fig. a.	L
5		STOP command	"	L
6		Command of F. REV operation	"	L
8		Command of PB and REV PB operations	"	L
9		Rotates the capstan motor in the normal direction. Turns on the FWD LED. Detects normal rotation.	"	L
11		Detects the mechanism's operating condition.	See Fig. b.	L
13				
14				
12		Detects the mechanism's FWD/REV operating condition.	See Fig. c.	L
15		Rotates the capstan motor in the reverse direction. Turns on the REV LED.	See Fig. a.	L
16	AUTO STOP TC.	Set AUTO-STOP time.		H
17	AUTO STOP	3-value input port to detect tape travelling Loads pin 16 with Low potential according to L or H input.	See Fig. d.	L/H
19	MODE	Sets for AUTO REV mode. 3-value input port	"	L : mode M : mode H : mode
21	Con.	Power supply terminal for the AUTO-STOP circuit.		
35	BATT. CHECK	Turns on the FWD LED and REV LED ports.		H (Turns on with approx. 1.0 V input)

**Fig. a** Key input ports**Fig. b** Flip-flop's reset input ports**Fig. c** FWD/REV position detecting ports**Fig. d** 3-value input ports**2. Input keys**

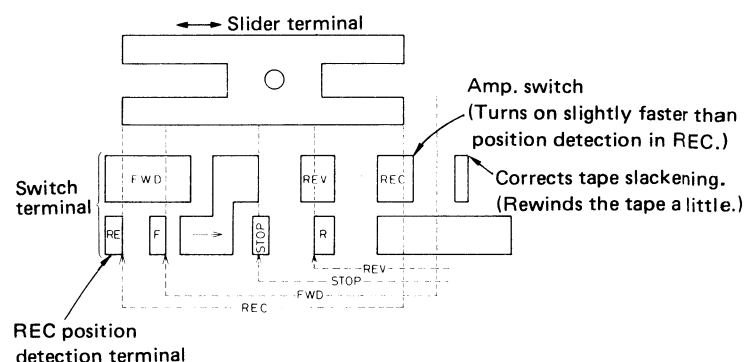
- (1) (PB, REC and REV operation)
- (2) (FF operation)
- (3) (F. REW operation)
- (4) (STOP)
- (5) (REC operation together with key)

Every key is connected with a corresponding input port () of the IC, respectively.

3. Operation patterns of cam interlocking switch (S305)

There are seven operation patterns of the cam interlocking switch; viz. , and every pattern is connected with a corresponding input port of the IC. (See Table 3.)

When a contact point is engaged for operation, the corresponding active value becomes Low level (see Fig. 1).

**Fig. 3-1** Pattern of the cam interlocking switch (S305)

4) Relating states of I/O ports and capstan motor switch
(S305) (See Table 5 below.)

Table 5 State of I/O ports by mode

Mode	Mechanism control IC									
	Input port *1)		Output port *2)							
	FWD	REV	C.MOTOR FWD	C.MOTOR REV	REV	CD	+B	MUTE	FWD LED	REV LED
○	L	H	L	H	H	L	L	L	H	L
▷	L	H	L	H	H	L	L	L	H	L
▷▷	H	H	L	H	H	L	H	H	H	L
□	H	H	H	H	H	H	H	L	L	L
◁◁	H	H	H	L	L	L	H	H	L	H
◁	H	L	H	L	L	L	L	L	L	H

Notes: *1) States of these input ports are determined according to position of the cam's contact point.

*2) The above truth values of FWD LED and REV LED are all "L" when potential at BATT. CHECK input port is "H" and BATT. CHECK level is "L".

5) Other I/O ports

- (1) AUTO STOP (pin 17) and AUTO STOP TC (pin 16)
When differential waveform from the photo coupler is supplied to pin 17 (AUTO STOP), pin 16 (AUTO STOP TC) discharges.
When tape travel reaches its end, pin 16 becomes of "M" level and pin 17 becomes "H" at a set time for AUTO STOP operation. At this time, it starts one of three operations ($\rightarrow$ $\rightarrow$ $\rightarrow$) according to the present mode of the port. (See Table 3.)

- (2) BATTERY CHECK (pin 35)
With 1 V (or more) input, it makes the FWD LED and REV LED possible to turn on.
- (3) $\overline{OP}$ (pin 31)
During the actuator motor is in operation, $\overline{OP}$ is of "L" level to mute amplifier's output.

6) Logical diagram

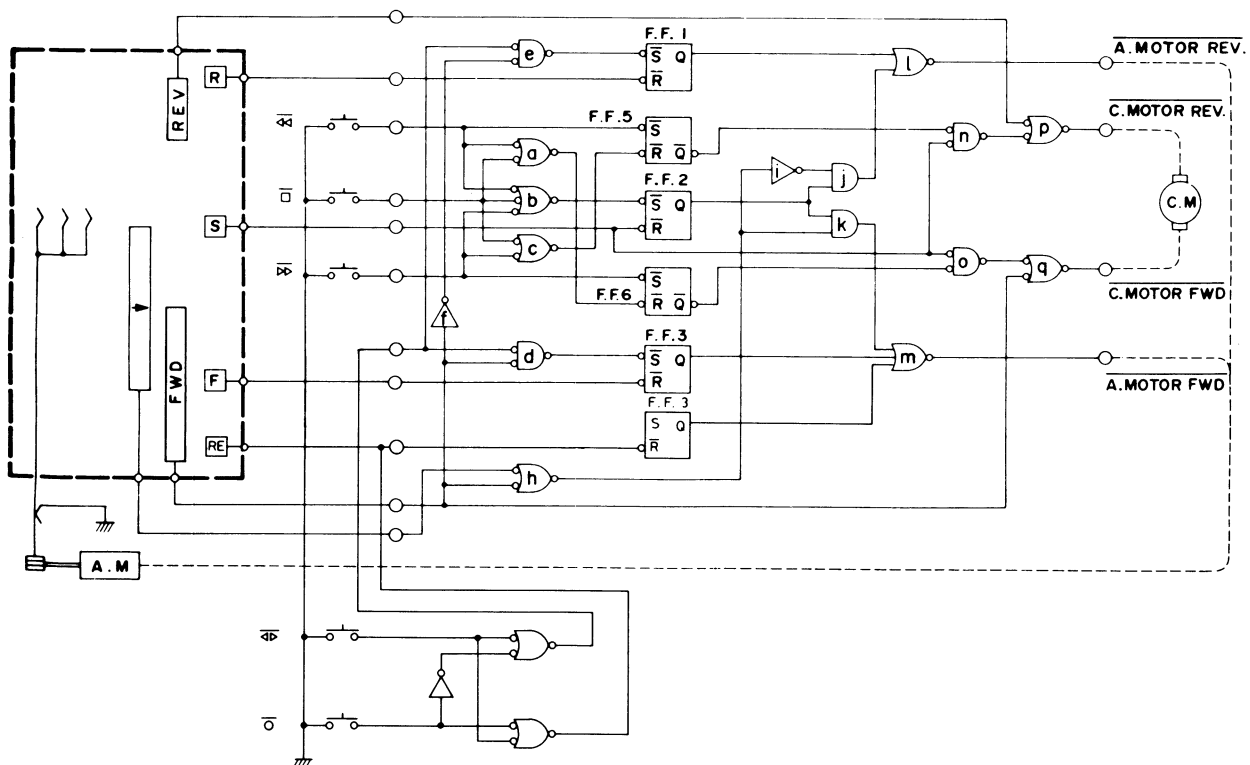


Fig. 3-2

4 Main Adjustment

Conditions Power supply : DC 3.0 V MIC input : -60 dBm
Output : 16 Ω load impedance at both headphone terminals

	Items	Tape to be used	Adjustment procedure	Select switch position	Adjustment points
1.	Head azimuth adjustment	Test tape VTT702 (8 kHz)	Play back the test tape in the FWD and REV modes and adjust the azimuth adj. screw to the mid-point of both peak levels. (Apply screw locking compound after adjustment.)	TAPE 120 μ s (Normal)	Azimuth adjusting screw
2.	Tape speed adjustment and wow & flutter check	Test tape VTT712 (3 kHz)	Playing back the test tape for tape speed adjustment, adjust VR302 (accessible through a hole on the bottom cover) so that the counter reads 3000 Hz $\pm$ 10 Hz in FWD PLAY mode and 2940–3060 Hz in REW mode. Wow & flutter should be within 0.5% (JIS RMS).	TAPE	VR302 on Governor board Adjustment can be performed externally through the center hole on the bottom.
3.	Playback frequency characteristic check	Test tape VTT736	Playback output level should be as follows with respect to 1 kHz output (30 mV/16 Ω). Normal tape 125 Hz : -2 dB $\pm$ 3 dB 8 kHz : 0 $\pm$ 3 dB Metal tape 8 kHz : -4 dB $\pm$ 3 dB	TAPE 120 μ s (Normal) TAPE 70 μ s (Metal)	
4.	Playback sensitivity adjustment	Test tape VTT724 (1 kHz)	In FWD and PB (PLAY) modes, adjust output at the PB GAIN TP so that it becomes -22 dB $\pm$ 1 dB for both L and R channels. (Output terminal: Pins 6 and 20 of IC302)	TAPE 120 μ s (Normal)	
5.	Playback output check	VTT724	Output at the headphone terminals should be 4 mW (0.25 V/16 Ω) at 10% distortion. Level difference between L and R channels should be within 3 dB.	TAPE 120 μ s (Normal)	
6.	REC sensitivity	TS-8 (UD)	Record a MIC input of 1 kHz, -60 dB, and play back it to confirm that difference between its level and that of the alignment tape VTT724 is within 0 $\pm$ 3 dB. (Output terminal: Headphone terminal)	NR : OFF TAPE 120 μ s	
7.	REC/PB frequency characteristic	TS-8 (UD)	With MIC input of -80 dBm record 1 kHz, 150 Hz, and 8 kHz signals, and play back them to confirm that their output levels through the headphone terminal are as follow: 150 Hz : -1 $\pm$ 3 dB 8 kHz : 0 $\pm$ 3 dB	TAPE 120 μ s (Normal) Beat cut: (Standard : 1) NR : OFF	
8.	Dolby effect check	—	With a Dolby effect measuring filter (see below) used, confirm that difference between noise levels at turning on the NR switch and turning it off is more than 8 dB.	TAPE	
Dolby effect measuring filter					

Governor P.C. Board

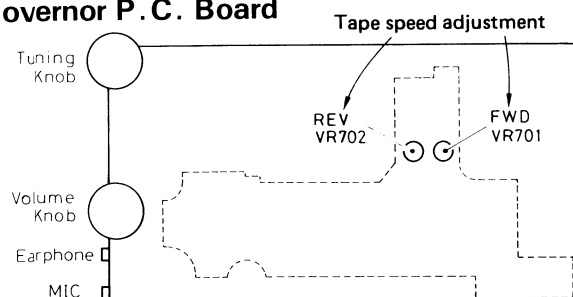
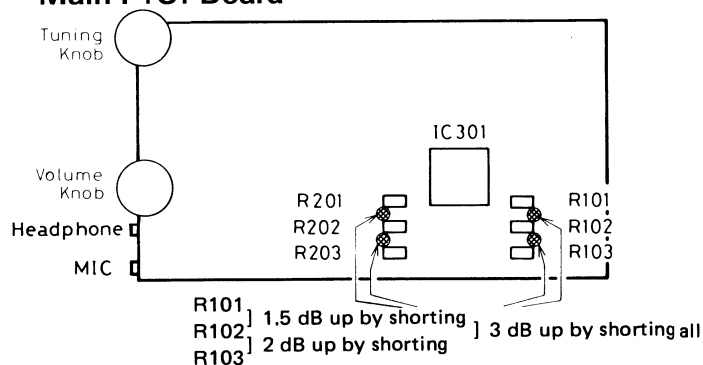


Fig. 4-1

Main P.C. Board



* The above is the same for R channel.

Fig. 4-2

■ Head azimuth and height adjustment

After replacement of the head, proceed adjustments in the following order.

1. Check up the head's tilting angle (use M300 gauge). Refer to Fig. 4-3(A).
2. Height adjustment of the head and the tape guide (use M300 gauge). Refer to Fig. 4-3(B).
After checking up the tape guide height at its right and left ends, adjust the heights of the both ends by turning the screws **A** and **B**.
3. Head azimuth adjustment (use the alignment tape VTT-702 [8 kHz segment]).
 - 1) In FWD mode, adjust the azimuth screw **A** to obtain the maximum output.
 - 2) With the tape travelling in REV PB mode, adjust the head height adjusting screw **B** to obtain the peak level. (At this time, make sure not to turn the screw over 180° .) Difference between the peak levels in FWD and REV modes should be within 4 dB.
 - 3) With the tape travelling in FWD mode again, adjust the azimuth adjusting screw **A** to set for the peak level.
 - 4) Repeat tape travelling in REV mode, check the peak level again.
 - 5) After completion of the above procedures, lock the screws **A** and **B** with screw locking bond, etc.
4. In the step 3.-2) above, if the difference exceeds 4 dB, perform the following adjustment.
 - 1) In REV mode, turn the head height adjustment screw **B** by 180° in the contrary direction to the peak.
 - 2) Repeat the adjustment of 3.-3) above.

● Final fine adjustment

Fine adjustment can be performed by turning the screw through a hole located on the right top of the FF button on the cover.

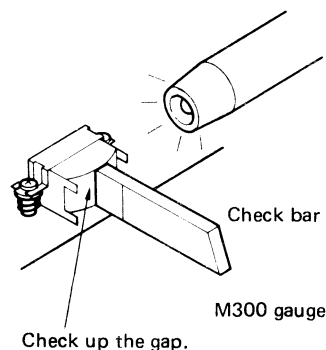


Fig. 4-3 (A) Checkup of head tilting angle

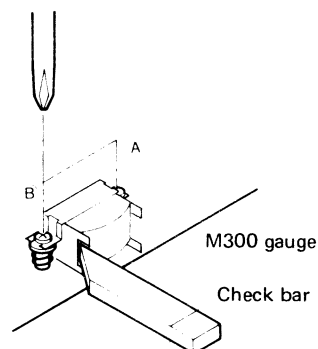


Fig. 4-3 (B) Checkup of tape guide height

Adjustment Points of Tuner Section

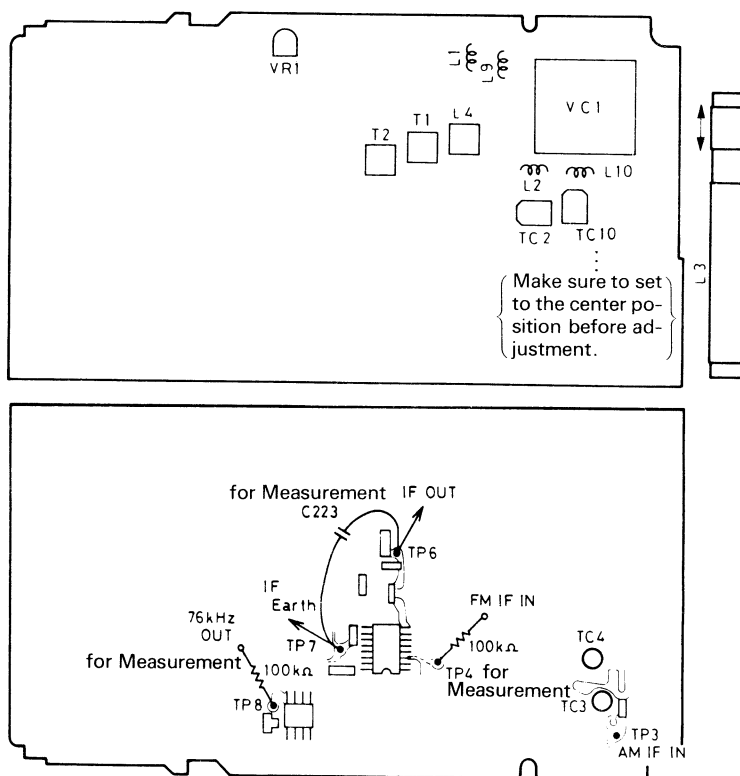


Fig. 4-4

■ Adjustment of tuner section

Conditions Power supply : DC 3 V Function switch : Set to RADIO Mode switch : Stereo
 Volume control : Set to the maximum position except for IF adjustment (IF - at the minimum position)
 Output measurement point: Headphones (output level of 40 mV/16 Ω)
 Input signal : AM : Modulation frequency 400 Hz, Modulation degree : 30%
 FM : Modulation frequency 400 Hz, Frequency deviation : 22.5 kHz (30%)

■ Tuning voltage adjustment

Connect a voltmeter to the governor board. With the tuning volume VR2 turned fully clockwise (Lowest position), adjust VR3 so that voltage between TP8 and TP2 (GND, minus side of an electrolytic capacitor) becomes $1.5 \text{ V} \pm 0.1 \text{ V}$.

■ AM IF adjustment

Band select switch : Set to AM position.

Position of VC1 : Near minimum capacitor position with no input signal.

Input : From TP3 terminal

Output : From TP6

Ground : TP7

Input signal	Adjustment points	Output measurement points	Adjustment procedure
From OUT terminal of IF sweep generator (450 kHz). (Connect 30 pF capacitance & 33 k Ω resistance in series.)	T1	Connect TP6 (hot side) and TP7 (GND side) to the sweep generator's IN terminal. (Connect 0.08 μ F capacitance and 100 k Ω resistance in series.)	With maximum output, adjust T1 to to obtain symmetrical waveforms for L and R channels.

■ AM RF adjustment

Input : Via standard loop antenna; SSG modulation output : 400 Hz, 30%.

No.	Input frequency	Adjustment points	Position of VC1	Adjustment procedure
1	520 kHz	L4	Maximum capacitor	Tune in a required frequency.
2	1650kHz	TC4	Minimum capacitor	
3	Perform adjustments by repeating the above items (No. 1 and 2).			
4	600 kHz	L3	Adjust for 600 kHz signal reception.	Set for maximum output.
5	1400 kHz	TC3	Adjust for 1400 kHz signal reception.	
6	Perform adjustments by repeating the above items (No. 4 and 5).			

■ FM IF adjustment

Band select switch : FM position

Position of VC1 : Near the minimum capacitor position with no input signal.

Input : TP4

Output : TP6

Ground : TP7

Input signal	Adjustment points	Output measurement points	Adjustment procedure
From OUT terminal of IF sweep generator (10.7 MHz).	DISC: T2	Connect IF OUT terminal to the sweep generator's IN terminal.	Turn T2 to make symmetrical S-curved waveforms for R and L channels and adjust for the maximum.

Note: Ceramic filter's center frequencies: Black 10.64 MHz, Blue 10.67 MHz, Red 10.7 MHz, Orange 10.73 MHz, White 10.76 MHz

■ FM RF and MPX adjustments

Input : Via rod antenna (TP1) with GND (TP5)

Band select switch : FM position

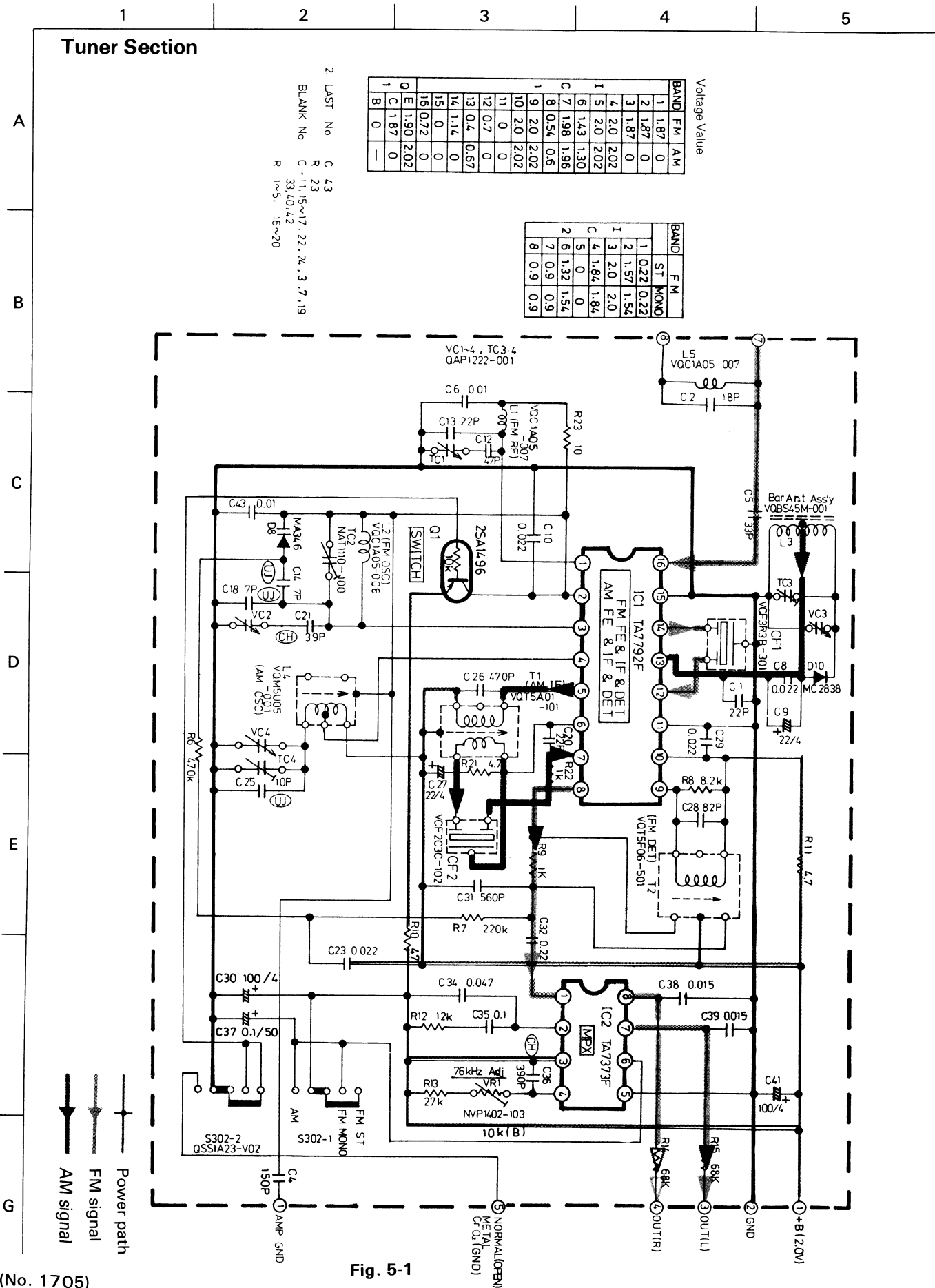
FM SSG output : 400 Hz, 30% (22.5 kHz deviation)

FM mode : STEREO

Output impedance : 75 Ω unbalanced

No.	Input frequency	Adjustment points	Position of VC1	Adjustment procedure
1	87.5 MHz	L2	Maximum capacitor	Tune in a required frequency. (FM position)
2	106.0 MHz	TC2	Minimum capacitor	
3	Perform adjustments by repeating the above items (No. 1 and 2).			
4	90.0 MHz	L1	For 90MHz signal reception.	Set for the maximum output.
FM, MPX	98 MHz, 60 dB (Monaural)	VR1		Adjust VR1 to tune in 76 kHz $\pm$ 100 Hz. Connect a frequency counter to TP 8 and TP 7 (GND).

5 Standard Schematic Diagrams



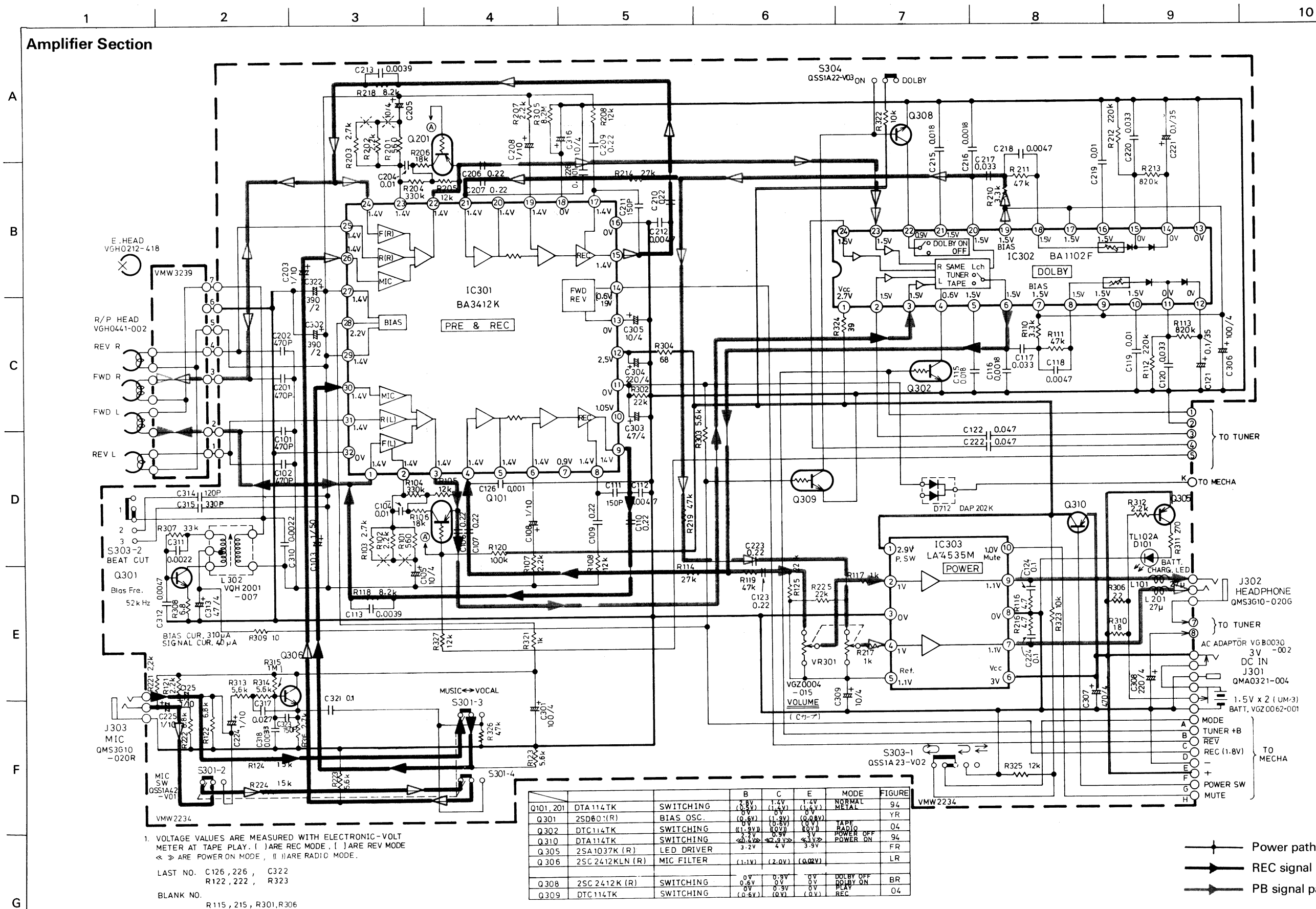


Fig. 5-2

1

2

3

4

5

6

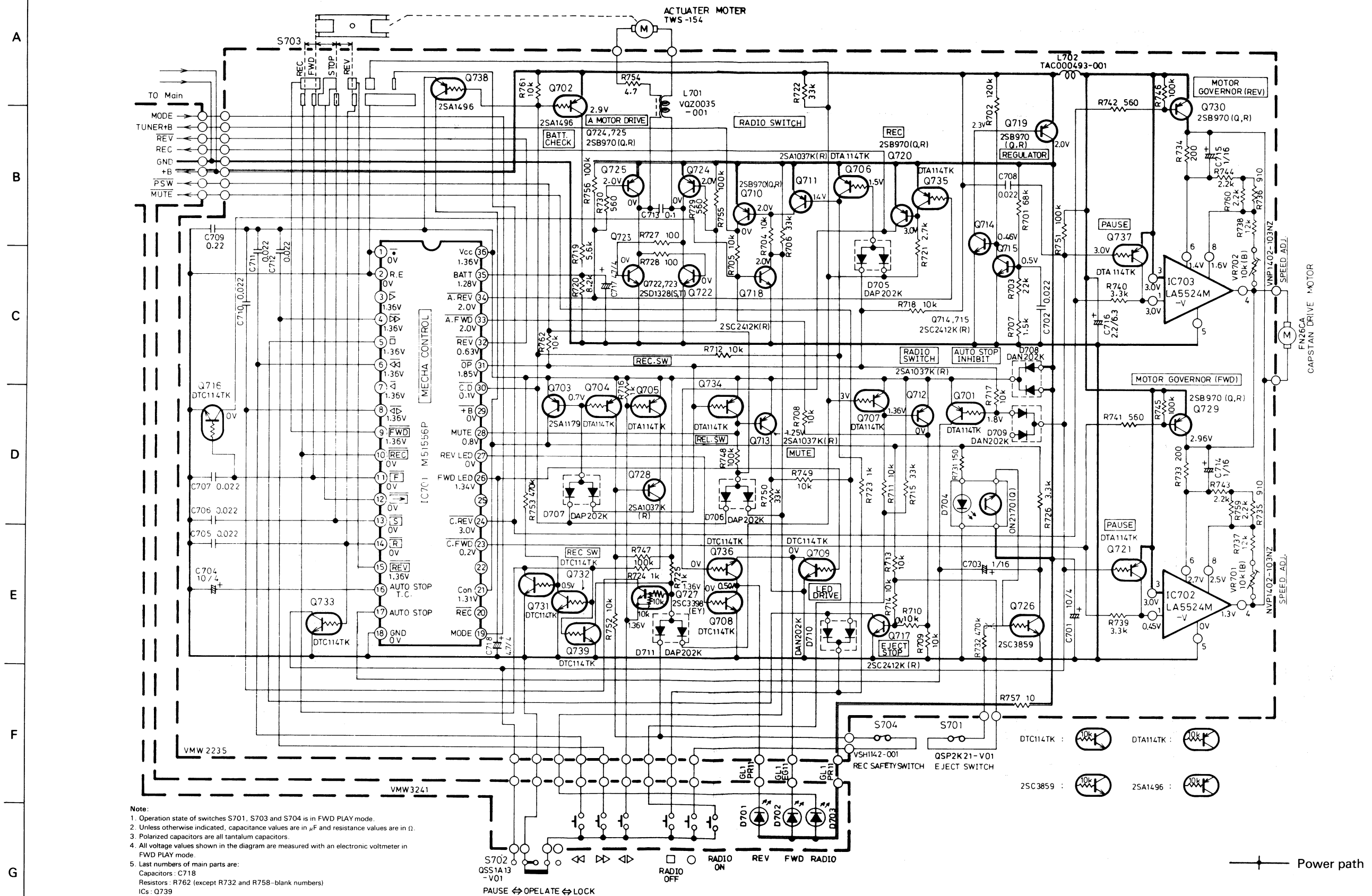
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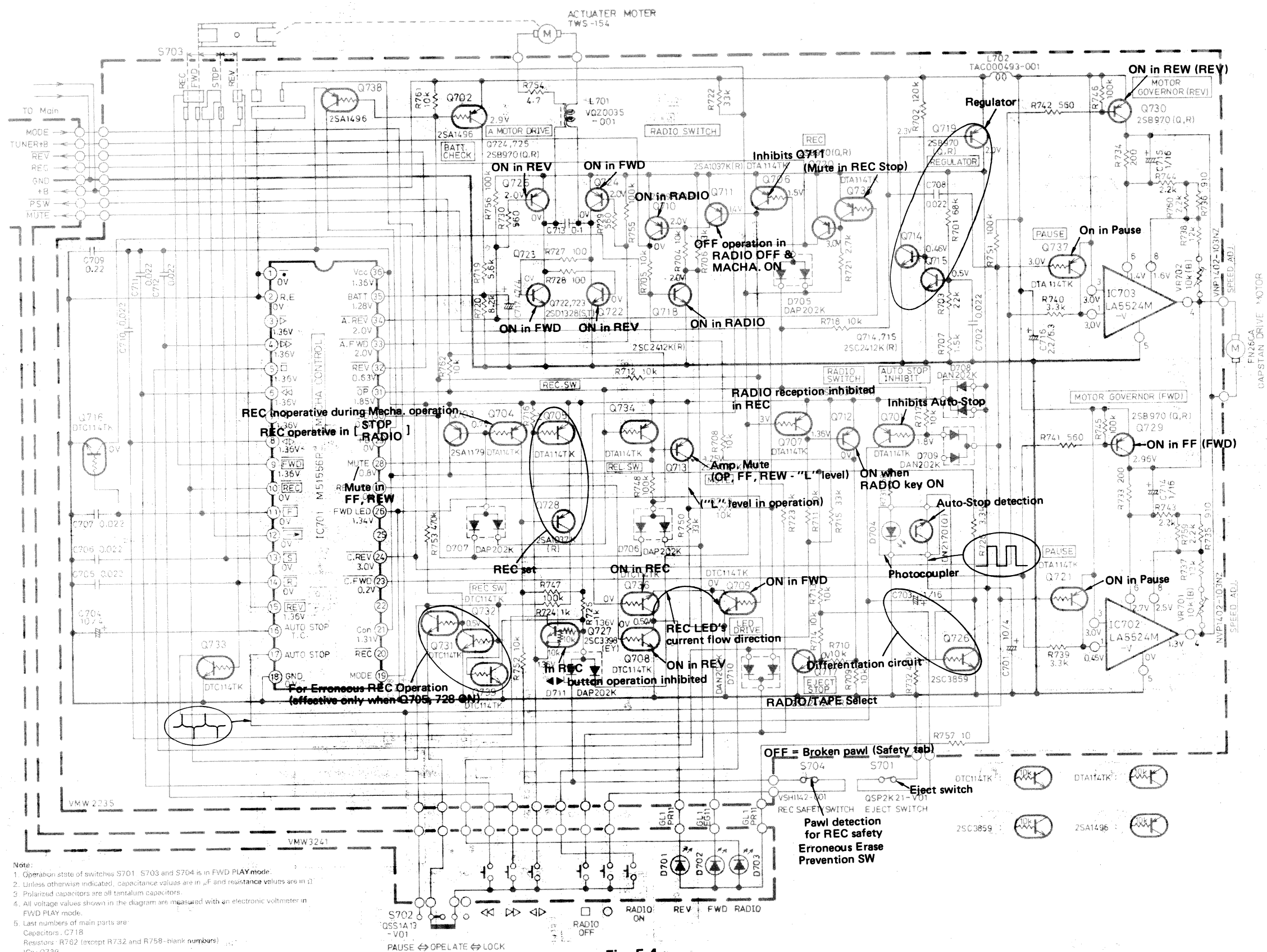
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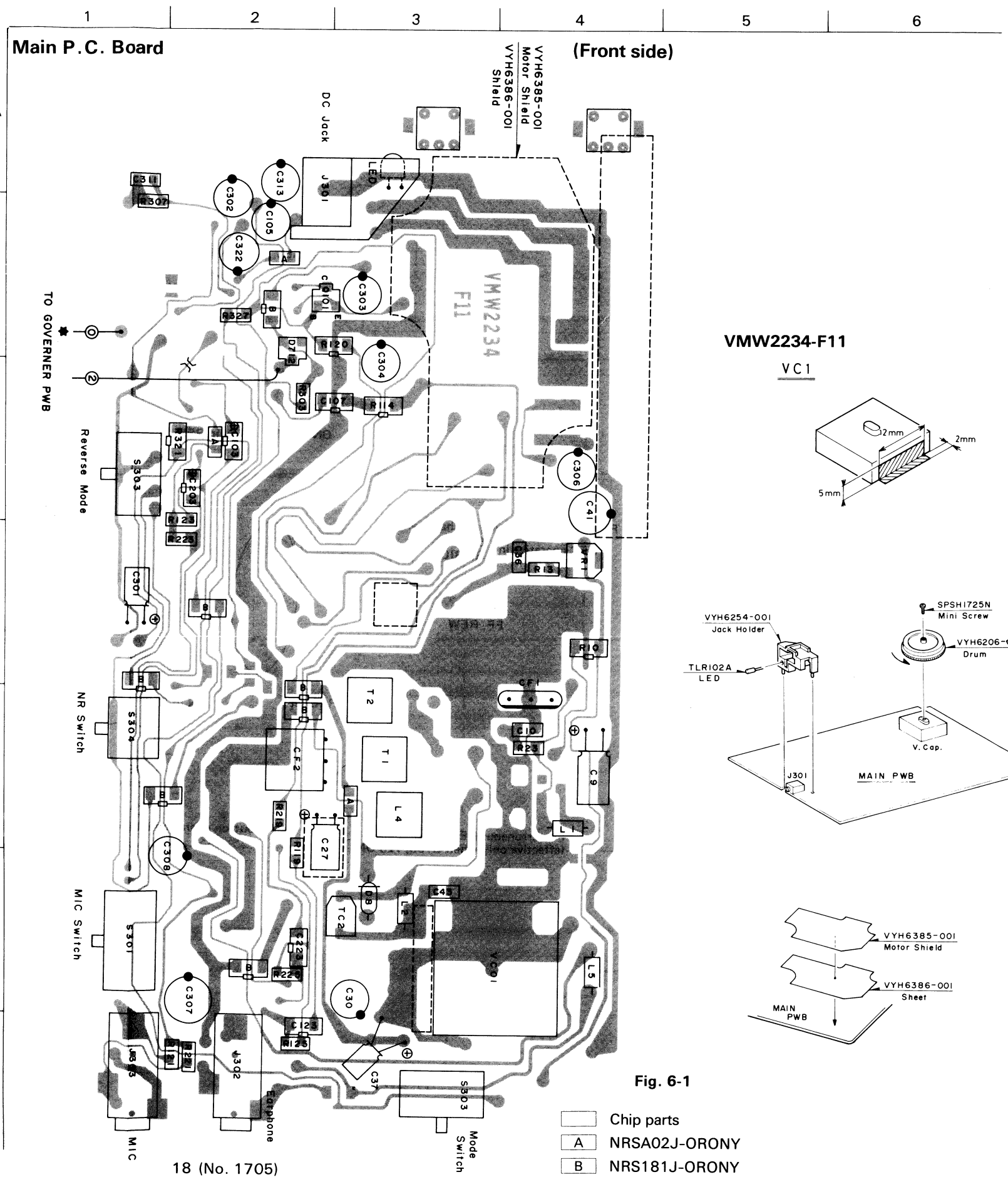
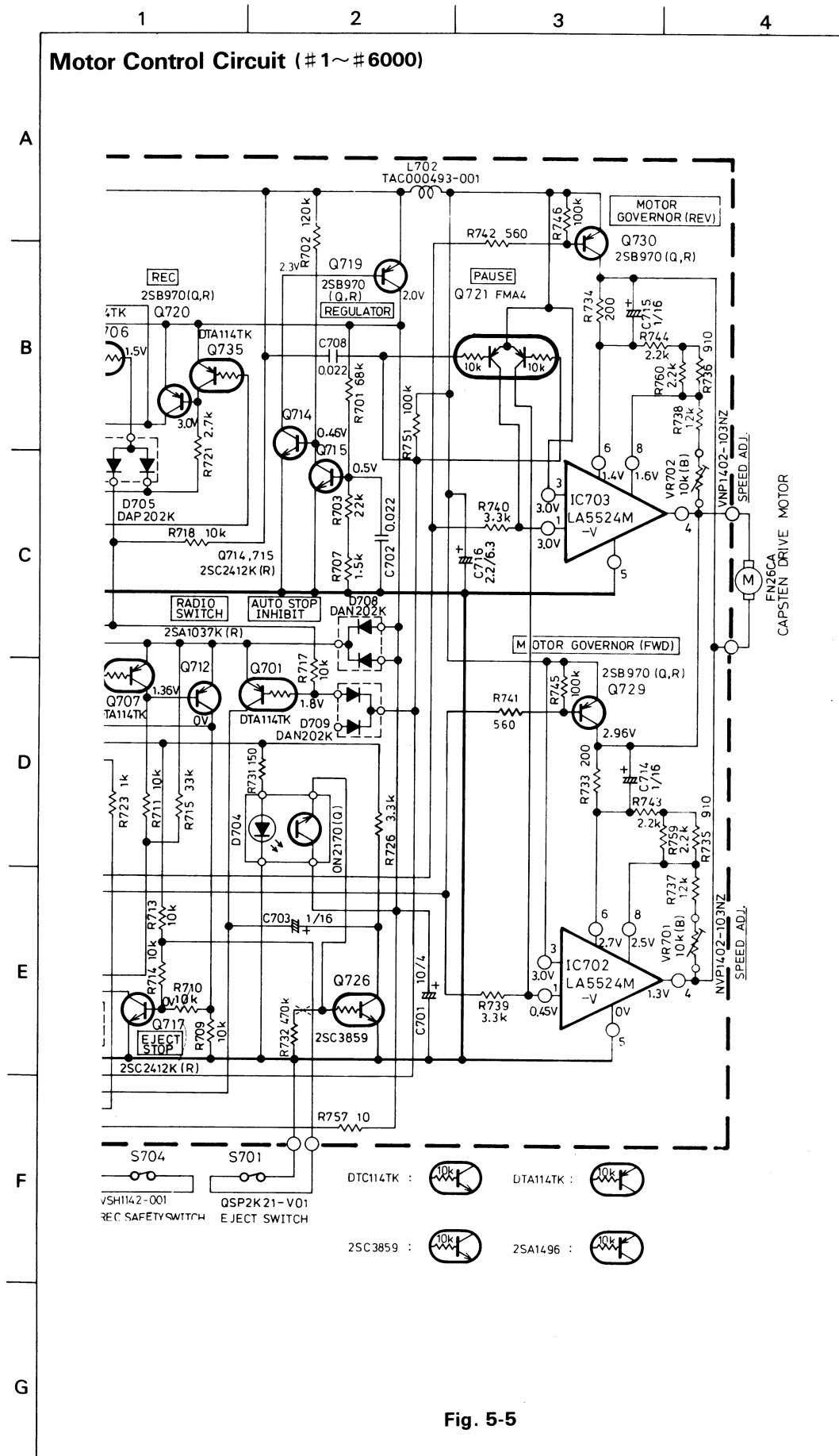
Control Section



Circuit Explanation



6 P.C. Board Diagrams and Parts List



(Rear side)

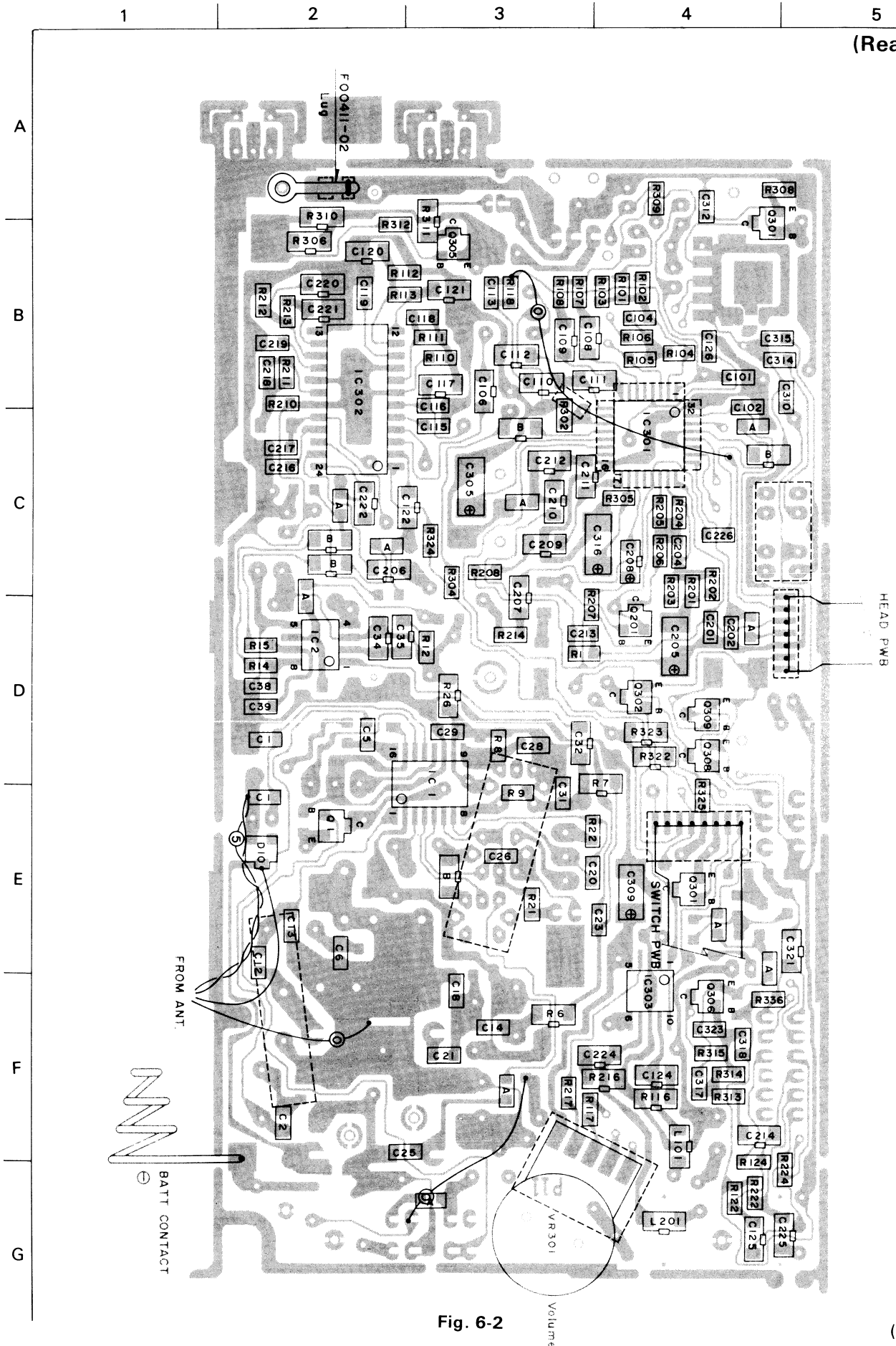


Fig. 6-2

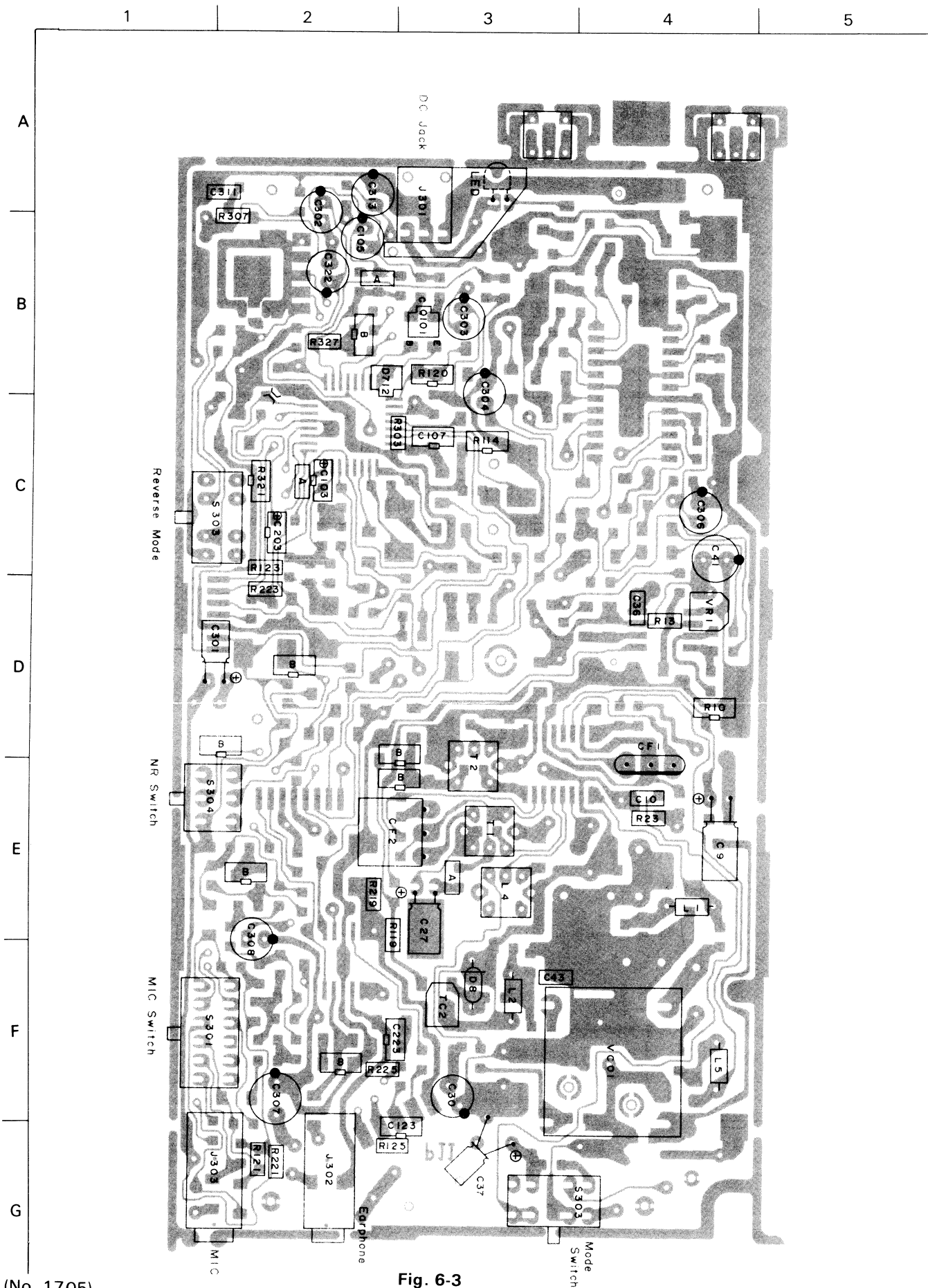


Fig. 6-3

△ Parts are safety assurance parts

When replacing those parts, make sure to use the specified one.

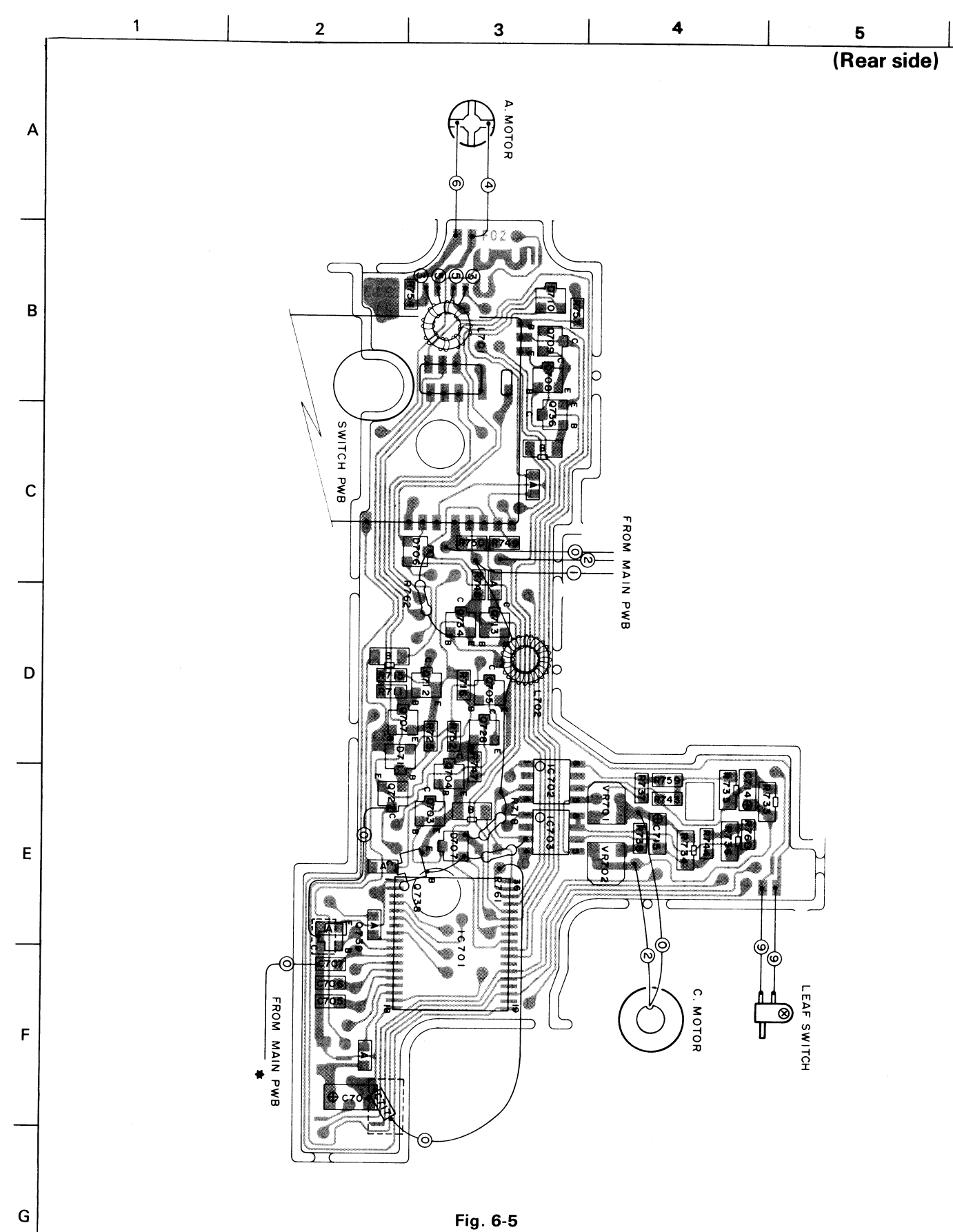
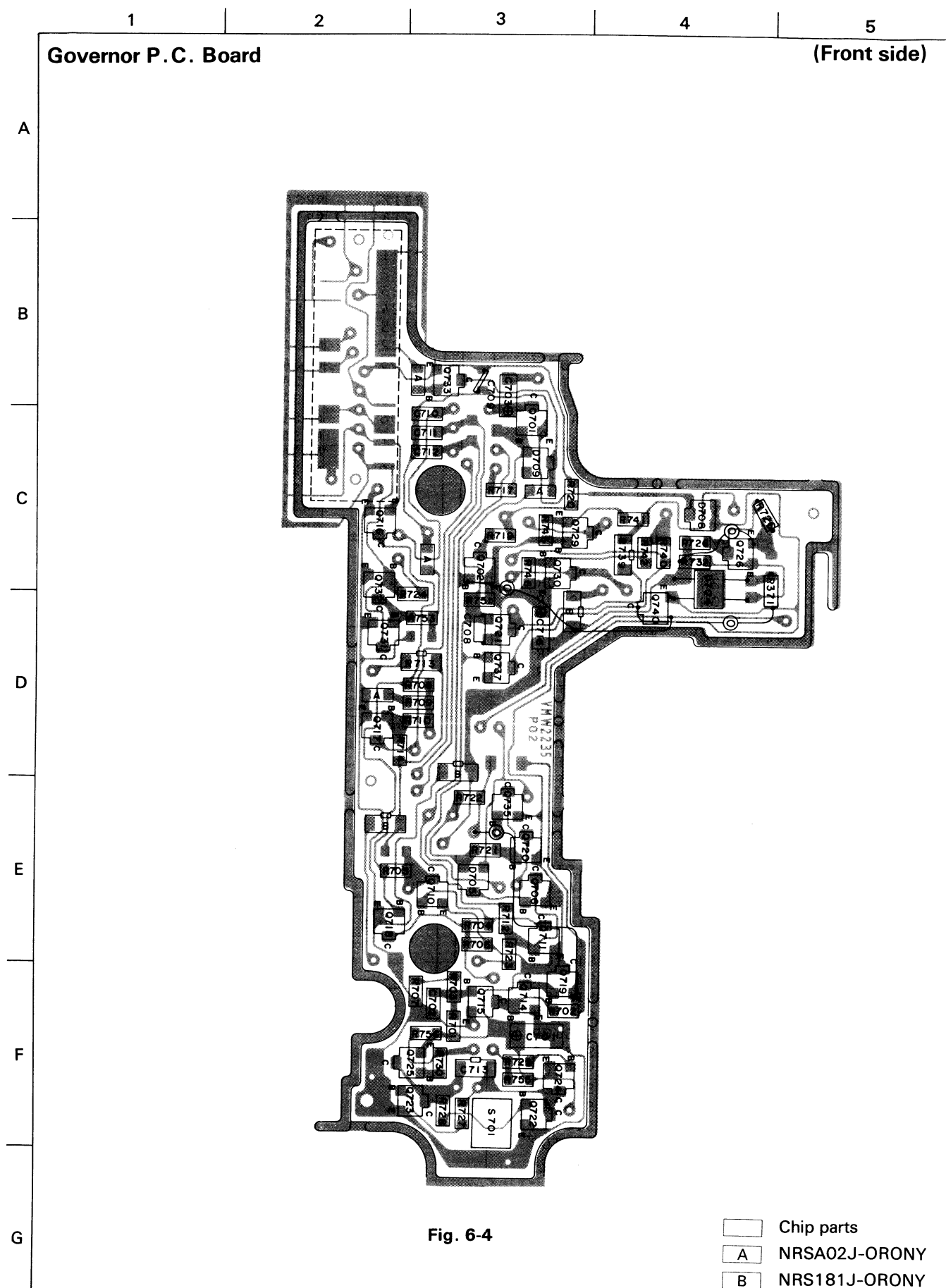
Main P.C. Board Parts List

△	REF. NO	PARTS NO.	PARTS NAME
	CF1	VCF3R3B-301	C FILTER
	CF2	VCF2C3C-102	C FILTER
	C001	NCS21HJ-220AY	C CAPACITOR
	C002	NCS21HJ-180AY	C CAPACITOR
	C004	QCS81HK-151Y	C CAPACITOR
	C005	NCS21HJ-330AY	C CAPACITOR
	C006	NCB21EK-103AY	C CAPACITOR
	C008	NCB21EK-223AY	C CAPACITOR
	C009	QER40GM-226M	E CAPACITOR
	C010	NCB21EK-223AY	C CAPACITOR
	C012	NCS21HJ-470AY	C CAPACITOR
	C013	NCS21HJ-220AY	C CAPACITOR
	C014	NCT21UJ-7R0AY	C CAPACITOR
	C018	NCT21UJ-7R0AY	C CAPACITOR
	C020	NCS21HJ-220AY	C CAPACITOR
	C021	NCT21CH-390AY	C CAPACITOR
	C023	NCB21EK-223AY	C CAPACITOR
	C025	NCT21UJ-100AY	C CAPACITOR
	C026	NCS21HJ-471AY	C CAPACITOR
	C027	QER40GM-226M	E CAPACITOR
	C028	NCS21HJ-820AY	C CAPACITOR
	C029	NCB21EK-223AY	C CAPACITOR
	C030	QER40GM-107VM	E CAPACITOR
	C031	NCS21HJ-561AY	C CAPACITOR
	C032	QCF81EZ-224Y	C CAPACITOR
	C034	QCY81EK-473Y	C CAPACITOR
	C035	QCF81HZ-104Y	C CAPACITOR
	C036	NCT21CH-391AY	C CAPACITOR
	C037	QER41HM-104M	E CAPACITOR
	C038	NCB21EK-153AY	C CAPACITOR
	C039	NCB21EK-153AY	C CAPACITOR
	C041	QER40GM-107VM	E CAPACITOR
	C043	NCB21EK-103AY	C CAPACITOR
	C050	NCS21HJ-151AY	C CAPACITOR
	C101	NCS21HJ-471AY	C CAPACITOR
	C102	NCS21HJ-471AY	C CAPACITOR
	C103	NEF11AM-105RY	TS E CAPACITOR
	C104	NCB21EK-103AY	C CAPACITOR
	C105	QER41CM-106VM	E CAPACITOR
	C106	QCF81EZ-224Y	C CAPACITOR
	C107	QCF81EZ-224Y	C CAPACITOR
	C108	NEF11AM-105RY	TS E CAPACITOR
	C109	QCF81HZ-104Y	C CAPACITOR
	C110	QCF81EZ-224Y	C CAPACITOR
	C111	QCS81HK-151Y	C CAPACITOR
	C112	QCY81HK-472Y	C CAPACITOR
	C113	NCB21HK-392AY	C CAPACITOR
	C115	NCB21EK-183AY	C CAPACITOR
	C116	NCB21HK-182AY	C CAPACITOR
	C117	QCY81EK-333Y	C CAPACITOR
	C118	NCB21HK-472AY	C CAPACITOR
	C119	NCB21HK-103AY	C CAPACITOR
	C120	QCY81EK-333Y	C CAPACITOR
	C121	NEF11VM-104RY	TS E CAPACITOR
	C122	QCY81EK-473Y	C CAPACITOR
	C123	QCF81EZ-224Y	C CAPACITOR
	C124	QCF81HZ-104Y	C CAPACITOR
	C125	QCF81EZ-224Y	C CAPACITOR
	C126	NCB21HK-102AY	C CAPACITOR
	C201	NCS21HJ-471AY	C CAPACITOR

△	REF. NO	PARTS NO.	PARTS NAME
	C202	NCS21HJ-471AY	C CAPACITOR
	C203	NEF11AM-105RY	TS E CAPACITOR
	C204	NCB21EK-103AY	C CAPACITOR
	C205	QEF80GM-106LB	TS E CAPACITOR
	C206	QCF81EZ-224Y	C CAPACITOR
	C207	QCF81EZ-224Y	C CAPACITOR
	C208	NEF11AM-105RY	TS E CAPACITOR
	C209	QCF81HZ-104Y	C CAPACITOR
	C210	QCF81EZ-224Y	C CAPACITOR
	C211	QCS81HK-151Y	C CAPACITOR
	C212	QCY81HK-472Y	C CAPACITOR
	C213	NCB21HK-392AY	C CAPACITOR
	C214	QCF81EZ-224Y	C CAPACITOR
	C215	NCB21EK-183AY	C CAPACITOR
	C216	NCB21HK-182AY	C CAPACITOR
	C217	QCY81EK-333Y	C CAPACITOR
	C218	NCB21HK-472AY	C CAPACITOR
	C219	NCB21HK-103AY	C CAPACITOR
	C220	QCY81EK-333Y	C CAPACITOR
	C221	NEF11VM-104RY	TS E CAPACITOR
	C222	QCY81EK-473Y	C CAPACITOR
	C223	QCF81EZ-224Y	C CAPACITOR
	C224	QCF81HZ-104Y	C CAPACITOR
	C225	QCF81EZ-224Y	C CAPACITOR
	C226	NCB21HK-102AY	C CAPACITOR
	C301	QER40GM-107M	E CAPACITOR
	C302	QEK40DR-397M	E CAPACITOR
	C303	QER40GM-476VM	E CAPACITOR
	C304	QER40GM-227VM	E CAPACITOR
	C305	QEF80GM-106LB	TS E CAPACITOR
	C306	QER40GM-107VM	E CAPACITOR
	C307	QEK40GM-477M	E CAPACITOR
	C308	QER40GM-227VM	E CAPACITOR
	C309	QEF80GM-106LB	TS E CAPACITOR
	C310	NCB21HK-222AY	C CAPACITOR
	C311	NCB21HK-222AY	C CAPACITOR
	C312	NCB21EK-472AY	C CAPACITOR
	C313	QER40GM-476VM	E CAPACITOR
	C314	NCS21HJ-121AY	C CAPACITOR
	C315	NCS21HJ-331AY	C CAPACITOR
	C316	QEF80GM-106LB	TS E CAPACITOR
	C317	NCB21EK-273AY	C CAPACITOR
	C318	NCB21HK-332AY	C CAPACITOR
	C321	QCF81HZ-104Y	C CAPACITOR
	C322	QEK40DR-397M	E CAPACITOR
	C323	NCS21HJ-151AY	C CAPACITOR
	D008	MA346	V DIODE
	D010	MC2838X	DIODE
	D101	TLR102A	LED
	D712	DAN202KT96	DIODE
	IC01	TA7792F-T1	IC
	IC02	TA7373F-T1	IC
	IC301	BA3412K	IC
	IC302	BA1102F-T1	IC
	IC303	LA4533M-T1	IC
	J301	QMA0321-004	DC JACK
	J302	QMS3G10-020G	JACK
	J303	QMS3G10-020R	JACK
	L001	VQC1A05-007	COIL
	L002	VQC1A05-006	COIL

△	REF. NO	PARTS NO.	PARTS NAME
	L003	VQBS45M-001	BAR ANTENA
	L004	VQMSU05-001	OSC COIL(MW)
	L005	VQC1A05-007	COIL
	L101	VQP1003-270Y	INDUCTOR
	L201	VQP1003-270Y	INDUCTOR
	L302	VQH2001-008	OSC COIL(BIAS)
	Q001	2SA1496-TB	TRANSISTOR
	Q101	DTA114TKT96	TRANSISTOR
	Q201	DTA114TKT96	TRANSISTOR
	Q301	2SD601(R)X	TRANSISTOR
	Q302	DTA114TKT96	TRANSISTOR
	Q305	2SA1037K(R)T96	TRANSISTOR
	Q306	2SC2412KLN,RT96	TRANSISTOR
	Q308	2SC2412K(R)T96	TRANSISTOR
	Q309	DTA114TKT96	TRANSISTOR
	Q310	DTA114TKT96	TRANSISTOR
	R006	NRS181J-474NY	MG RESISTOR
	R007	NRS181J-224NY	MG RESISTOR
	R008	NRSA02J-822NY	MG RESISTOR
	R009	NRSA02J-102NY	MG RESISTOR
	R010	NRS181J-470NY	MG RESISTOR
	R011	NRS181J-4R7NY	MG RESISTOR
	R012	NRSA02J-123NY	MG RESISTOR
	R013	NRSA02J-273NY	MG RESISTOR
	R014	NRSA02J-683NY	MG RESISTOR
	R015	NRSA02J-683NY	MG RESISTOR
	R021	NRSA02J-4R7NY	MG RESISTOR
	R022	NRSA02J-102NY	MG RESISTOR
	R023	NRSA02J-100NY	MG RESISTOR
	R101	NRSA02J-561NY	MG RESISTOR
	R102	NRSA02J-222NY	MG RESISTOR
	R103	NRSA02J-272NY	MG RESISTOR
	R104	NRSA02J-334NY	MG RESISTOR
	R105	NRSA02J-123NY	MG RESISTOR
	R106	NRSA02J-183NY	MG RESISTOR
	R107	NRSA02J-222NY	MG RESISTOR
	R108	NRSA02J-123NY	MG RESISTOR
	R110	NRSA02J-332NY	MG RESISTOR
	R111	NRSA02J-473NY	MG RESISTOR
	R112	NRSA02J-224NY	MG RESISTOR
	R113	NRSA02J-824NY	MG RESISTOR
	R114	NRS181J-273NY	MG RESISTOR
	R116	NRS181J-4R7NY	MG RESISTOR
	R117	NRSA02J-102NY	MG RESISTOR
	R118	NRSA02J-822NY	MG RESISTOR
	R119	NRSA02J-473NY	MG RESISTOR
	R120	NRS181J-104NY	MG RESISTOR
	R121	NRSA02J-222NY	MG RESISTOR
	R122	NRSA02J-682NY	MG RESISTOR
	R123	NRSA02J-562NY	MG RESISTOR
	R124	NRSA02J-153NY	MG RESISTOR
	R125	NRSA02J-223NY	MG RESISTOR
	R201	NRSA02J-561NY	MG RESISTOR
	R202	NRSA02J-222NY	MG RESISTOR
	R203	NRSA02J-272NY	MG RESISTOR
	R204	NRSA02J-334NY	MG RESISTOR
	R205	NRSA02J-123NY	MG RESISTOR
	R206	NRSA02J-183NY	MG RESISTOR
	R207	NRSA02J-222NY	MG RESISTOR
	R208	NRSA02J-123NY	MG RESISTOR

△	REF. NO	PARTS NO.	PARTS NAME
	R210	NRSA02J-332NY	MG RESISTOR
	R211	NRSA02J-473NY	MG RESISTOR
	R212	NRSA02J-224NY	MG RESISTOR
	R213	NRSA02J-824NY	MG RESISTOR
	R214	NRSA02J-273NY	MG RESISTOR
	R216	NRS181J-4R7NY	MG RESISTOR
	R217	NRSA02J-102NY	MG RESISTOR
	R218	NRSA02J-822NY	MG RESISTOR
	R219	NRSA02J-473NY	MG RESISTOR
	R221	NRSA02J-222NY	MG RESISTOR
	R222	NRSA02J-682NY	MG RESISTOR
	R223	NRSA02J-562NY	MG RESISTOR
	R224	NRSA02J-153NY	MG RESISTOR
	R225	NRSA02J-223NY	MG RESISTOR
	R302	NRSA02J-223NY	MG RESISTOR
	R303	NRSA02J-562NY	MG RESISTOR
	R304	NRSA02J-680NY	MG RESISTOR
	R305	NRSA02K-825NY	MG RESISTOR
	R306	NRS181J-220NY	MG RESISTOR
	R307	NRSA02J-333NY	MG RESISTOR
	R308	NRSA02J-688NY	MG RESISTOR
	R309	NRSA02J-100NY	MG RESISTOR
	R310	NRS181J-180NY	MG RESISTOR
	R311	NRS181J-271NY	MG RESISTOR
	R312	NRSA02J-222NY	MG RESISTOR
	R313	NRSA02J-562NY	MG RESISTOR
	R314	NRSA02J-562NY	MG RESISTOR
	R315	NRSA02J-105NY	MG RESISTOR
	R316	NRSA02J-272NY	MG RESISTOR
	R317	NRSA02J-104NY	MG RESISTOR
	R321	NRS181J-102NY	MG RESISTOR
	R322	NRS181J-103NY	MG RESISTOR
	R323	NRS181J-103NY	MG RESISTOR
	R324	NRSA02J-470NY	MG RESISTOR
	R325	NRSA02J-123NY	MG RESISTOR
	R326	NRSA02J-473NY	MG RESISTOR
	R327	NRSA02J-123NY	MG RESISTOR
	S301	QSS1A42-V01R	SLIDE SW
	S302	QSS1A23-V02	SLIDE SW
	S303	QSS1A23-V02	SLIDE SW
	S304	QSS1A22-V03	SLIDE SW
	TC02	NAT1110-100AZ	T.CAPACITOR
	T01	VQT5A01-101	IFT
	T02	VQT5F06-501	IFT
	VC01	QAP1222-001	V CAPACITOR
	VR01	NVP1402-103NZ	V RESISTOR
	VR301	VGZ0004-015	V RESISTOR



Governor P.C. Board Parts List

△	REF. NO	PARTS NO.	PARTS NAME
	C701	QEF80GM-106LB	TS E CAPACITOR
	C702	NCB21EK-223AY	C CAPACITOR
	C703	NEF11CM-105RY	TS E CAPACITOR
	C704	QEF80GM-106LB	TS E CAPACITOR
	C705	NCB21EK-223AY	C CAPACITOR
	C706	NCB21EK-223AY	C CAPACITOR
	C707	NCB21EK-223AY	C CAPACITOR
	C709	QCF81EZ-224Y	C CAPACITOR
	C710	NCB21EK-223AY	C CAPACITOR
	C711	NCB21EK-223AY	C CAPACITOR
	C712	NCB21EK-223AY	C CAPACITOR
	C713	QCF81HZ-104Y	C CAPACITOR
	C714	NEF11CM-105RY	TS E CAPACITOR
	C715	NEF11CM-105RY	TS E CAPACITOR
	C716	NEF10JM-225RY	TS E CAPACITOR
	C717	NEF10GM-475LY	TS E CAPACITOR
	C718	NEF10GM-475LY	TS E CAPACITOR
	D704	ON2170(Q)	PHOTO COUPLER
	D705	DAP202KT96	DIODE
	D706	DAP202KT96	DIODE
	D707	DAP202KT96	DIODE
	D708	DAP202KT96	DIODE
	D709	DAN202KT96	DIODE
	D710	DAN202KT96	DIODE
	D711	DAP202KT96	DIODE
	IC701	M51556P-T1	IC
	IC702	LA5524M-V-T1	I C (MOTOR GOV)
	IC703	LA5524M-V-T1	I C (MOTOR GOV)
	L701	VQZ0035-001	INDUCTOR
	L702	TAC000493-01	INDUCTOR
	Q701	DTA114TKT96	TRANSISTOR
	Q702	2SA1496-TB	TRANSISTOR
	Q703	2SA1179M.6TB	TRANSISTOR
	Q704	DTA114TKT96	TRANSISTOR
	Q705	DTA114TKT96	TRANSISTOR
	Q706	DTA114TKT96	TRANSISTOR
	Q707	DTA114TKT96	TRANSISTOR
	Q708	DTC114TKT96	TRANSISTOR
	Q709	DTC114TKT96	TRANSISTOR
	Q710	2SB970(Q,R)X	TRANSISTOR
	Q711	2SA1037K(R)T96	TRANSISTOR
	Q712	2SA1037K(R)T96	TRANSISTOR
	Q713	2SA1037K(R)T96	TRANSISTOR
	Q714	2SC2412K(R)T96	TRANSISTOR
	Q715	2SC2412K(R)T96	TRANSISTOR
	Q716	DTC114TKT96	TRANSISTOR
	Q717	2SC2412K(R)T96	TRANSISTOR
	Q718	2SC2412K(R)T96	TRANSISTOR
	Q719	2SB970(Q,R)X	TRANSISTOR
	Q720	2SB970(Q,R)X	TRANSISTOR
	Q721	DTA114TKT96	TRANSISTOR
	Q722	2SD1328(S,T)X	TRANSISTOR
	Q723	2SD1328(S,T)X	TRANSISTOR
	Q724	2SB970(Q,R)X	TRANSISTOR
	Q725	2SB970(Q,R)X	TRANSISTOR
	Q726	2SC3859-TB	TRANSISTOR
	Q727	2SC3398(EY)TB	TRANSISTOR
	Q728	2SA1037K(R)T96	TRANSISTOR
	Q729	2SB970(Q,R)X	TRANSISTOR
	Q730	2SB970(Q,R)X	TRANSISTOR
	Q731	DTC114TKT96	TRANSISTOR
	Q732	DTC114TKT96	TRANSISTOR
	Q733	DTC114TKT96	TRANSISTOR
	Q734	DTA114TKT96	TRANSISTOR
	Q735	DTA114TKT96	TRANSISTOR
	Q736	DTC114TKT96	TRANSISTOR
	Q738	2SA1496-TB	TRANSISTOR
	Q739	DTC114TKT96	TRANSISTOR
	R701	NRSA02J-683NY	MG RESISTOR
	R702	NRSA02J-124NY	MG RESISTOR

△ Parts are safety assurance parts
When replacing those parts, make sure to use the specified one.

△	REF. NO	PARTS NO.	PARTS NAME
	R703	NRSA02J-223NY	MG RESISTOR
	R704	NRSA02J-103NY	MG RESISTOR
	R705	NRS181J-103NY	MG RESISTOR
	R706	NRSA02J-333NY	MG RESISTOR
	R707	NRSA02J-152NY	MG RESISTOR
	R708	NRSA02J-103NY	MG RESISTOR
	R709	NRSA02J-103NY	MG RESISTOR
	R710	NRSA02J-103NY	MG RESISTOR
	R711	NRSA02J-103NY	MG RESISTOR
	R712	NRSA02J-103NY	MG RESISTOR
	R713	NRS181J-103NY	MG RESISTOR
	R714	NRSA02J-103NY	MG RESISTOR
	R715	NRSA02J-333NY	MG RESISTOR
	R716	NRSA02J-102NY	MG RESISTOR
	R717	NRSA02J-103NY	MG RESISTOR
	R718	NRS181J-103NY	MG RESISTOR
	R719	NRSA02J-562NY	MG RESISTOR
	R720	NRSA02J-822NY	MG RESISTOR
	R721	NRSA02J-272NY	MG RESISTOR
	R722	NRSA02J-333NY	MG RESISTOR
	R723	NRSA02J-102NY	MG RESISTOR
	R724	NRSA02J-102NY	MG RESISTOR
	R725	NRSA02J-102NY	MG RESISTOR
	R726	NRSA02J-332NY	MG RESISTOR
	R727	NRSA02J-101NY	MG RESISTOR
	R728	NRSA02J-101NY	MG RESISTOR
	R729	NRSA02J-561NY	MG RESISTOR
	R730	NRSA02J-561NY	MG RESISTOR
	R731	NRSA02J-151NY	MG RESISTOR
	R732	NRSA02J-474NY	MG RESISTOR
	R733	ERS-L15G201U	MF RESISTOR
	R734	ERS-L15G201U	MF RESISTOR
	R735	ERS-L18J911U	MF RESISTOR
	R736	ERS-L18J911U	MF RESISTOR
	R737	NRSA02J-123NY	MG RESISTOR
	R738	NRSA02J-123NY	MG RESISTOR
	R739	NRS181J-332NY	MG RESISTOR
	R740	NRSA02J-332NY	MG RESISTOR
	R741	NRSA02J-561NY	MG RESISTOR
	R742	NRSA02J-561NY	MG RESISTOR
	R743	NRSA02J-222NY	MG RESISTOR
	R744	NRSA02J-222NY	MG RESISTOR
	R745	NRSA02J-104NY	MG RESISTOR
	R746	NRSA02J-104NY	MG RESISTOR
	R747	NRSA02J-104NY	MG RESISTOR
	R748	NRSA02J-104NY	MG RESISTOR
	R749	NRSA02J-103NY	MG RESISTOR
	R750	NRSA02J-333NY	MG RESISTOR
	R751	NRSA02J-222NY	MG RESISTOR
	R752	NRSA02J-103NY	MG RESISTOR
	R753	NRSA02J-474NY	MG RESISTOR
	R754	NRSA02J-4R7NY	MF RESISTOR
	R755	NRSA02J-104NY	MG RESISTOR
	R756	NRSA02J-104NY	MG RESISTOR
	R757	NRSA02J-100NY	MG RESISTOR
	R759	NRSA02J-222NY	MG RESISTOR
	R760	NRSA02J-222NY	MG RESISTOR
	R761	NRSA02J-103NY	MG RESISTOR
	R762	NRS181J-103NY	MG RESISTOR
	S701	QSP2K21-V01	PUSH SWITCH
	VR701	NVP1402-103NZ	V RESISTOR
	VR702	NVP1402-103NZ	V RESISTOR

Switch P.C. Board

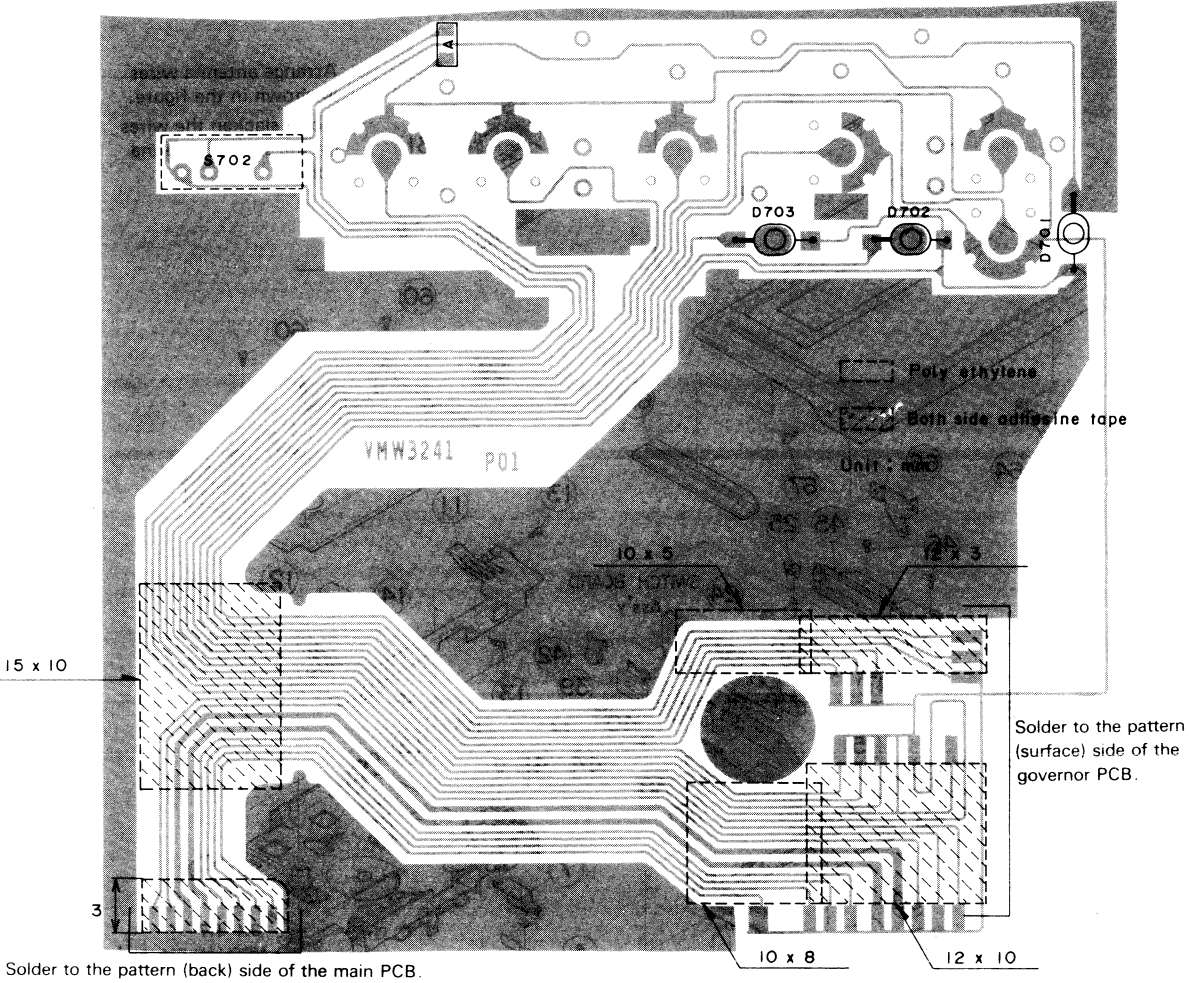


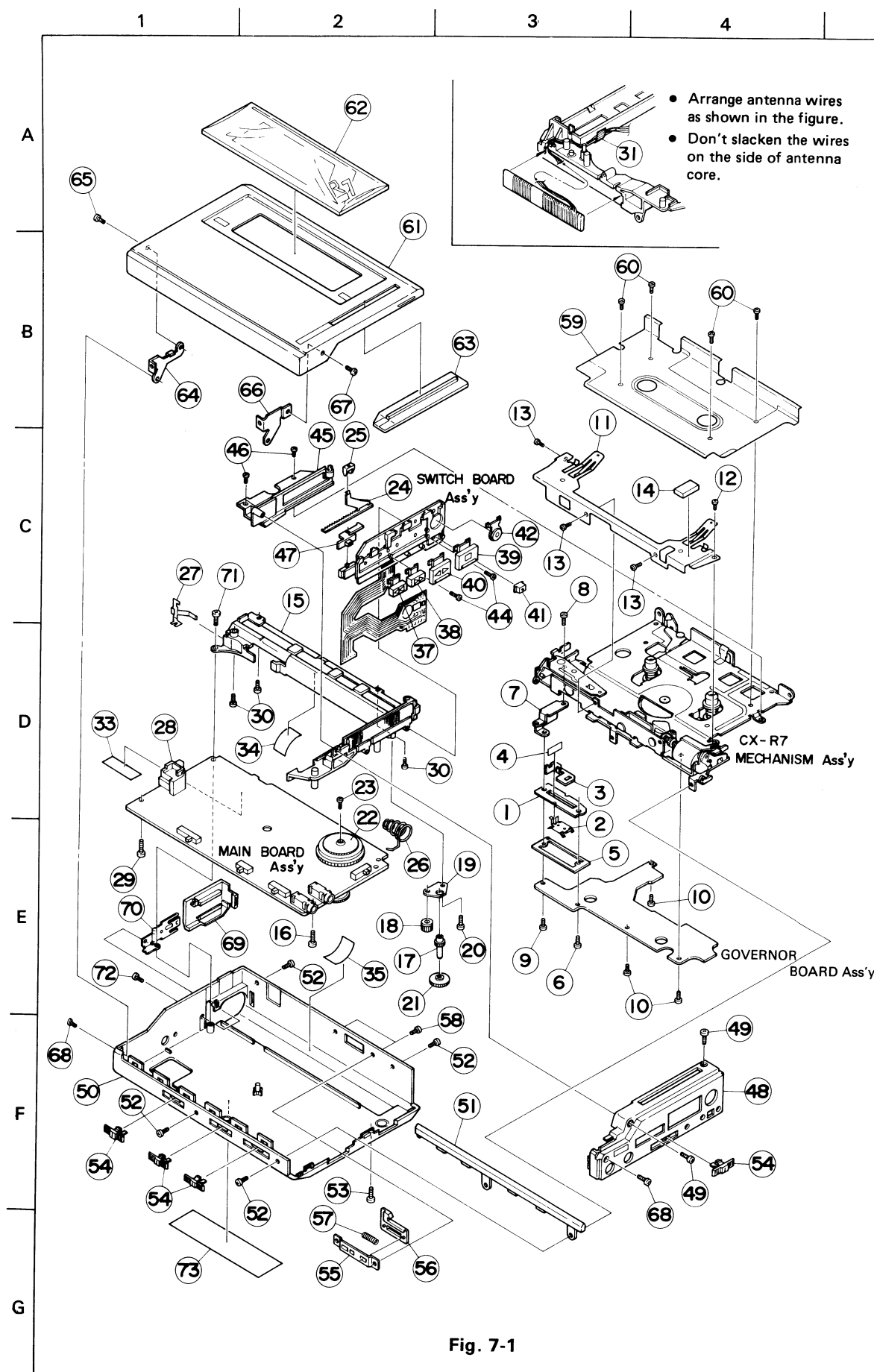
Fig. 6-6

Switch Board Parts List

△ Parts are safety assurance parts
When replacing those parts, make sure to use the specified one.

△	Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
	S702	QSSIA13-V01	Slide Switch		1
	D701	GL1PR11	LED	for Tuner	1
	D702	GL1EG11	"	FWD	1
	D703	GL1PR11	"	REV/REC	1
		NRSA02J-0RUNY	Chip Resistor	0 Ω	1

7 Exploded View of Enclosure Assembly and Parts List



Enclosure Assembly Parts List

△ Parts are safety assurance parts
When replacing those parts, make sure to use the specified one.

△	REF.	PARTS NO.	PARTS NAME	REMARKS	QTY
	1	VYH6255-001	SW COVER		1
	2	VYH6256-001	SLIDER		1
	3	VYH6325-001	HOLDER		1
	4	VYSS1R1-040	SPACER		1
	5	VYH6257-001	SW CASE		1
	6	SPSK1425M	MINI SCREW		1
	7	VYH6269-001	SIDE BRACKET		1
	8	SPSH1425N	MINI SCREW	MECHA X S.BKT	1
	9	SPSK1435N	MINI SCREW	MECHA X GPCB	1
	10	SPSH1425N	MINI SCREW	MECHA X GPCB	3
	11	VKL3829-002	STABILIZER		1
	12	SPSK1420M	MINI SCREW		1
	13	SSSK1416M	MINI SCREW		3
	14	VYSH103-055	SPACER	2.5 X 5 X 10	1
	15	VYH1156-001	CHASSIS		1
	16	SPSN1745M	MINI SCREW	FOR MAIN PCB	1
	17	VYH6204-001	TUNING GEAR		1
	18	VYH6205-001	SUB GEAR		1
	19	VYH6265-001	GEAR PLATE		1
	20	SPSN1745M	MINI SCREW	FOR G.PLATE	1
	21	VXL4283-001	TUNING KNOB		1
	22	VYH6206-001	DRUM		1
	23	SPSH1725N	SCREW	FOR DRUM	1
	24	VJN4111-001	NEEDLE		1
	25	VJD5015-001	CAP		1
	26	VYH6251-001	BATT SPRING		1
	27	VYH6252-001	CONTACT		1
	28	VYH6254-001	JACK HOLDER	DC/LED	1
	29	SPSH1425M	MINI SCREW	MAIN PCB X MECHA	1
	30	SPSH1425M	MINI SCREW	CHASSIS X MECHA	3
	31	VYSA1R4-062	SPACER	BAR ANT WIRE	2
	33	VYSA1R4-030	SPACER	MOTOR WIRE 5X30	2
	34	VYSA1R4-030	SPACER	BATT	1
	35	VYSA1R4-005	SPACER		1
	37	VXP4568-001	BUTTON	REW	1
	38	VXP4568-002	BUTTON	FF	1
	39	VXP4568-003	BUTTON	STOP	1
	40	VXP4568-004	BUTTON	PLAY	1
	41	VXP4576-001	BUTTON	RA/CAS	1
	42	VXP4569-001	BUTTON		1
	44	SPSJ1435M	SCREW	CHASSIS X TACT	2
	45	VYH3389-001	NEEDLE GUIDE		1
	46	SPSH1425M	MINI SCREW	N.GAIDE X MECHA	2
	47	VXS4218-001	SLIDE KNOB	FOR SAFETY	1
	48	VJC2265-002	SIDE PANEL		1
	49	SPSN1745M	MINI SCREW	S.PANEL X N.GAIDE	2
	50	VJC1541-003	BOTTOM CASE		1
	51	VJD3617-001	FITTING		1
	52	SPSH1425M	MINI SCREW	FOR BOTTOM	4
	53	SPSJ1760M	MINI SCREW	FOR BOTTOM	1

⚠ Parts are safety assurance parts

When replacing those parts, make sure to use the specified one.

△	REF.	PARTS NO.	PARTS NAME	REMARKS	QTY
	54	VXS4204-001	SLIDE KNOB		4
	55	VYH6262-001	LOCK PLATE		1
	56	VXS4205-002	LOCK KNOB		1
	57	VKW3001-190	COMP SPRING	FOR LOCK	1
	58	SPSH1425M	MINI SCREW	FOR LOCK	2
	59	VJD3616-001	INNER LAY		1
	60	SPSK1416M	MINI SCREW	FOR INNER LAY	4
	61	VJT3188-003	CASSETTE LID		1
	62	VJK3351-001	CASSETTE LENS		1
	63	VJK4272-001	NEEDLE LENS		1
	64	VYH6263-002	BRACKET(L)		1
	65	SSSH1428M	SCREW	FOR LID	1
	66	VYH6264-001	BRACKET(R)		1
	67	SSSH1428M	SCREW		1
	68	VYH4043-003	SPECIAL SCREW	LID X BOTTOM	2
	69	VJC4113-001	BATT COVER		1
	70	VYSS1R3-019	SPACER		1
	71	SPSN1755N	MINI SCREW	CONTACT X BOTTOM	1
	72	SPSH1425M	MINI SCREW	CONTACT X BOTTOM	1
	73	VYN5110-002	NAME PLATE		1

Ass'y Parts List

⚠ Parts are safety assurance parts

When replacing those parts, make sure to use the specified one.

△	Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
	61, 62, 63	ZCCXR7K-CBK	Cassette Lid Ass'y	Black	1
	"	ZCCXR7K-CRD	"	Red	1

8 Exploded View of Mechanism Assembly

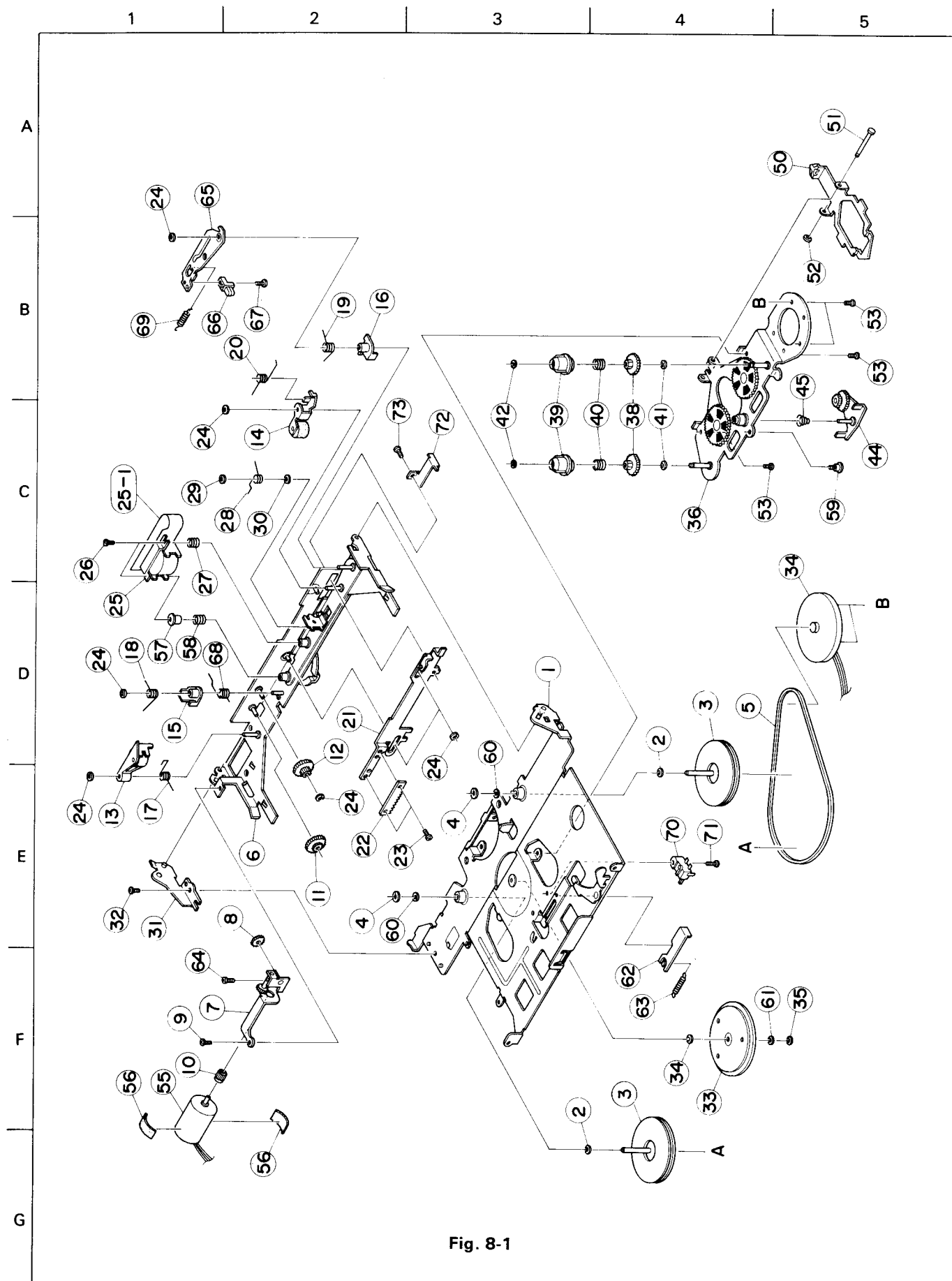


Fig. 8-1

Mechanism Assembly Parts List

△ Parts are safety assurance parts

When replacing those parts, make sure to use the specified one.

△	REF.	PARTS NO.	PARTS NAME	REMARKS	QTY
	1	VKL2296-00B	CHAS.BASE ASS'Y		1
	2	Q03093-830	WASHER		2
	3	VKF3139-00D	FLYWHEEL ASS'Y		2
	4	WDM153125	SLIT WASHER		2
	5	VKB3000-099	BELT		1
	6	VKL2298-00C	SUB.CHAS.ASS'Y		1
	7	VKL3713-00B	A.BKT ASS'Y		1
	8	VKS4821-001	A GEAR 3		1
	9	SPSK1420M	MINI SCREW		2
	10	VKS4822-002	A GEAR(1)		1
	11	VKS4823-001	A GEAR(4)		1
	12	VKS4824-001	A GEAR(5)		1
	13	VKP4181-00B	P.ROLLER ASS'Y	FWD	1
	14	VKP4182-00B	P.ROLLER ASS'Y	REV	1
	15	VKS4825-002	P.ROLLER LEVER	FWD	1
	16	VKS4933-001	P.ROLLER LEVER	REV	1
	17	VKW4622-001	TORSION SPRING		1
	18	VKW4623-001	TORSION SPRING		1
	19	VKW4624-001	TORSION SPRONG		1
	20	VKW4574-003	TORSION SPRING		1
	21	VKL6057-00A	SLIDER ASS'Y		1
	22	VKS4935-001	RACK		1
	23	VKZ4329-001	MINI SCREW		2
	24	WDL122525-4	SLIT WASHER		7
	25	VGH0441-002	R/P HEAD ASY		1
	25-1	VMW3239-001	PW BOARD		1
	26	SPSH1725N	SCREW		2
	27	VKW4577-001	COMP.SPRING		1
	28	VKW3001-194	COMP.SPRING		1
	29	Q03093-829	WASHER		1
	30	Q03093-630	WASHER		1
	31	VKL5936-00G	S.C.BRACKET		1
	32	SPSK1716M	SCREW		1
	33	VKR3131-00F	MAIN PULY ASS'Y		1
	34	Q03093-848	WASHER		1
	35	WDL082019-9	SLIT WASHER		1
	36	VKL2301-00B	REEL BASE ASY		1
	38	VKR4443-001	REEL GEAR		2
	39	VKR3133-002	REEL FEATHER		2
	40	VKW4580-001	COMP.SPRING		2
	41	Q03093-835	WASHER		2
	42	WDL122525-4	SLIT WASHER		2
	44	VKL5938-00B	MID.LEVER ASS'Y		1
	45	VKW4579-002	COMP.SPRING		1
	50	VKL3716-003	ELEVATOR		1
	51	VKH4859-001	SHAFT		1
	52	WDL082025-4	SLIT WASHER		1
	53	SPSK1716M	SCREW		2
	53	SPSK1716M	SCREW		2
	54	FN26CA	C.MOTOR		1

⚠ Parts are safety assurance parts

When replacing those parts, make sure to use the specified one.

△	REF.	PARTS NO.	PARTS NAME	REMARKS	QTY
	55	TWS-154	A.MOTOR		1
		TWS-154	A.MOTOR		1
	56	VYSA1R4-031	SPACER		2
	57	SPSH1740M	M SCREW		1
	57	VKH4960-001	HEAD COLLER		1
	58	VKW4627-001	COMP.SP.(HEAD)		1
	59	VKZ4357-001	SCREW		1
	60	VKZ4035-002	WASHER		2
	61	VKZ4035-003	WASHER		1
	62	VKL6063-001	SLIDE BAR		1
	63	VKW4618-001	TENSION SPRING		1
	65	VKL6058-00B	E.HEAD L.ASS'Y		1
	66	VGH0212-418	E.HEAD ASS'Y		1
	68	VKW4626-001	SPRING		1
	69	VKW3002-201	TENSION SPRING		1
	70	VSH1142-001	SWITCH		1
	71	SPSH2050M	SCREW		1
	72	VYH6270-001	SW ARM		1
	73	SPSK1414M	MINI SCREW		1

9 Packing and Packing Parts List

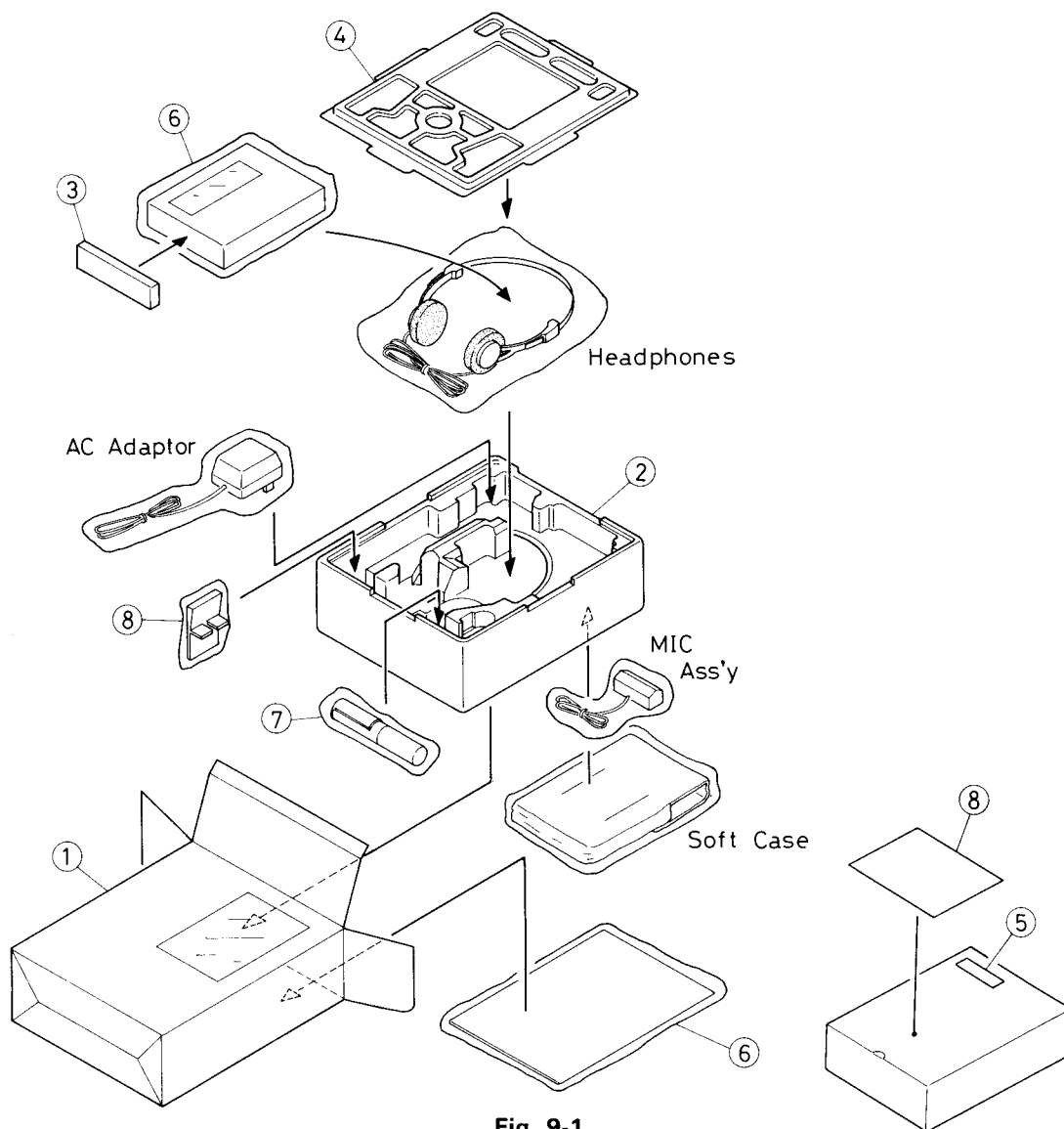


Fig. 9-1

Packing Parts List

⚠ Parts are safety assurance parts

When replacing those parts, make sure to use the specified one.

⚠	Ref. No.	Parts No.	Parts Name	Discription	Q'ty
	1	VPC5110-011	Carton	U Version	1
	2	VPH1381-001	Cushion		1
	"	-002	"		1
	3	VPK4208-003	Spacer		1
	4	VPH2170-001	Cushion		1
	5	VNC5003-005	Serial Cabel	for Instruction Book, Main Unit for Battery Ass'y for Mic Stand Ass'y	1
	"	VPZ4001-002	"		1
	6	QPGA012-02505	Poly Bag		1
	7	QPGA008-01205	"		1
	8	QPGA005-00703	"		1
	8	E66416-003	"	for Warranty	

10 Accessories

⚠ Parts are safety assurance parts

When replacing those parts, make sure to use the specified one.

⚠	Ref. No.	Parts No.	Parts Name	Discription	Q'ty
		VNN5110-611	Instruction Book		1
		" -801	"	U Version	1
		BT20047C	Warranty Card	J Version	1
		BT20025H	"	C Version	1
		BT20046B	Special Reply Card		1
		BT20071A	SVC Center List		1
		VGZ0062-00B	Rechargeable Battery Ass'y		1
		VGB0030-002	AC Adaptor	J Version	1
		" -003	"	C Version	1
		" -007	"	U Version 120V/220V	1
		VJY4021-001	Head Phones		1
		VJY4022-00B	MIC Ass'y		1
		VJD5030-00A	MIC Stand Ass'y		1
		VJB3020-00A	Soft Case		1
		VNC1200-002	Copyright Law Warning		1
		VNC5311-204	Caution Card	U Version for PX	1
		" -203	"	" for EES	1
		VO4062-003	Siemens Plug	U Version	1

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